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Cover: White-eyed helmeted skink, *Tribolonotus novaeguineae*. Drawing from *Erpétologie Générale on Histoire Naturelle Complète des Reptiles—Atlas* by A. M. C. Duméril, G. Bibron and A. Duméril, 1854.

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Herpetological Artwork at Washington Park Zoo, Michigan City, Indiana

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Michigan City's Division of Parks and Recreation operates Washington Park Zoo with financial and in-kind support from the Michigan City Zoological Society, Inc., an independent, volunteer-managed, nonprofit organization. The zoo spans 15 acres of natural hillside terrain along Lake Michigan's southern shore. The grounds include meandering, tree-covered pathways, various historical Works Progress Administration structures, and a herpetological sculpture that may interest CHS members.

Launched in 1928 as a sanctuary to house a retired circus bear and some surrendered exotic pets, Washington Park Zoo continues to welcome wildlife in need. Animals currently exhibited are native to Africa, Asia, Australia, North America, and South America. Many of the zoo residents have been pets that proved to be too wild or were confiscated as illegal. Others have suffered injuries that would make life in the wild impossible.

The zoo has a strong educational focus, with programs ranging from up-close animal encounters to zoo camps and classroom offerings. According to its website, the zoo strives to provide "our guests with encounters and opportunities to make memorable connections with wildlife" and by coupling visitor experiences with conservation teachings, "aims to inspire and empower visitors of all ages to take action on behalf of wildlife in their own backyard and around the world." The Washington Park Zoo is accredited by the Zoological Association of America (ZAA, not to be confused with the Association of Zoos and Aquariums [AZA]).

A large fiberglass model of a box turtle shell (Figure 1) is situated in a niche/nook along the trail near the zoo's reptile house and Peacock Café. A small sign lets visitors know that the area was dedicated in 2017 "in honor of Robert Beckner for his years of sharing his love of nature and education." A framed poster from the Indiana Department of Natural Resources sits behind the sculpture and discourages visitors from collecting box turtles, noting "Our friends with a shell aren't doing so well.



Figure 1. This large fiberglass box turtle shell sits along a trail near Washington Park Zoo's Reptile House and Peacock Café. Photograph by Dreux J. Watermolen.

Their future is poorest if not left in the forest. So don't take them home. They are better off on their own."

In addition to small photographs and interpretive graphics that accompany some of the animal exhibits, visitors will also find two colorful reptile themed signs (Figure 2): a stylized snake inside the Laughing Kookaburra (*Docelo novaeguineae*) cage and a stylized lizard in front of the wallaby (*Petrogale* sp.) and Emu (*Dromaius novaehollandiae*) enclosures.

More information about Washington Park Zoo is available at www.washingtonparkzoo.com.



Figure 2. Colorful signs depicting a stylized snake and lizard can be found among the animal exhibits at Washington Park Zoo. Photographs by Dreux J. Watermolen.

On a Diverse Collection of Snakes from Amadjabe, Left Bank of the Congo River, Northeastern Democratic Republic of the Congo

Olivier S. G. Pauwels¹ and Marc Colyn²

Abstract

We present a remarkably diverse collection of snakes made in the 1980s in Amadjabe village, on the left bank of the upper Congo River, about 60 km south of Kisangani, Tshopo Province, Democratic Republic of the Congo. Thirty-five species are represented, distributed among 27 genera. We provide standard meristic and morphometric data for each specimen. We report clutch sizes for *Thelotornis kirtlandii*, *Aparallactus modestus ubangensis*, *Chamaelycus parkeri* and *Causus lichtensteini*, and a record length for *Chamaelycus parkeri*. We report predation cases of *Dipsadoboa viridis gracilis* on *Ptychadena* sp. (Anura: Ptychadenidae), of *Grayia ornata* on *Clariallabes platyceps* (Siluriformes: Clariidae), of *Boaedon olivaceus* and *Bothrophthalmus lineatus* on micromammals, of *Hormonotus modestus* on *Trachylepis maculilabris* (Squamata: Scincidae), of *Lycophidion ornatum* on *Trachylepis* sp., and of *Causus lichtensteini* on *Leptopelis* sp. (Anura: Arthroleptidae).

Keywords

Biodiversity, herpetofauna, Squamata, biodiversity, Equatorial Africa, Afrotropics, Tshopo, Democratic Republic of the Congo.

Introduction

The village of Amadjabe (0°04'00.0"S 25°16'60.0"E, altitude 450 m above sea level) is located in the rainforest in the heart of the Congo Basin, between the Lusa and Kitcho-yatembo Rivers, on the left bank of the Congo River. In the early 1980s, in the frame of a collaboration with the University of Kisangani, one of us (MC) surveyed the mammal fauna of Amadjabe, and even made of it the type-locality of a new mongoose subspecies (Colyn and Van Rompaey, 1990). In parallel to these mammalogical studies, MC collected, from early January 1984 to mid-August 1985, not less than 157 snake specimens with the help of local villagers. In late 1985, 86 (i.e., 55%) of these vouchers were deposited in the zoological collections of the *Faculté des Sciences* of the *Université de Kisangani*, the rest was first deposited in the *Rijksuniversitair Centrum Antwerpen* (University of Antwerp, Belgium), then transferred for permanent deposition to the herpetological collections of the Royal Belgian Institute of Natural Sciences (RBINS) in Brussels. In 1987, five additional snakes were collected in the direct surroundings of Amadjabe by the ichthyologists Luc De Vos and M. I. Kimbembé, and deposited in the collections of the Royal Museum for Central Africa (RMCA) in Tervuren. None of these preserved snake specimens has been published to date, and so far the locality of Amadjabe was completely absent from the herpetological literature. The closest locality shown on the dotted distribution maps provided by Chippaux and Jackson (2019) is Kisangani, about 60 km to the north, which is relatively well known herpetologically (Laurent, 1965; Badjedjea et al., 2023). The herpetofauna found on the left bank of the upper Congo River is poorly sampled and its morphology insuffi-

ciently documented, which confers a great interest to the snake collection and associated scale counts, morphometric data and biological observations we are presenting here.

Material and Methods

Voucher specimens were opportunistically collected within a radius of five km around Amadjabe, i.e., on a total surface of about 80 square km. They were injected and fixed *in situ* with 4% formalin, then preserved in 70% ethanol. The material deposited in Kisangani is lost, as was other herpetological material deposited in the 1970s and 1980s (Badjedjea et al., 2023). However, MC took selected measurements and scale counts on each of these specimens before deposition, and we refer to them below using their field numbers (R). The material was (re-)identified in 2022 using the keys and morphological information provided by Schmidt (1923), de Witte and Laurent (1947), Laurent (1956), Gans (1959), Meirte (1992), Broadley and Wallach (2009), Greenbaum et al. (2015), Wüster et al. (2018), Rödel et al. (2019), Chippaux and Jackson (2019, with the corrections brought by Pauwels and Brecko, 2020), Collet and Trape (2020) and Chaney et al. (2021). Snake ventral scales were counted according to the method of Dowling (1951). Snake dorsal scale rows were counted at one head length behind head, at midbody (above the ventral corresponding to half of the total number of ventrals), and at one head length before vent; subcaudal counts exclude the terminal pointed scale. Paired meristic characters are given left/right. The sex of specimens collected by MC was determined by dissection of the base of the tail; the RMCA specimens were not dissected. Morphometric and meristic data are presented in the Appendix.

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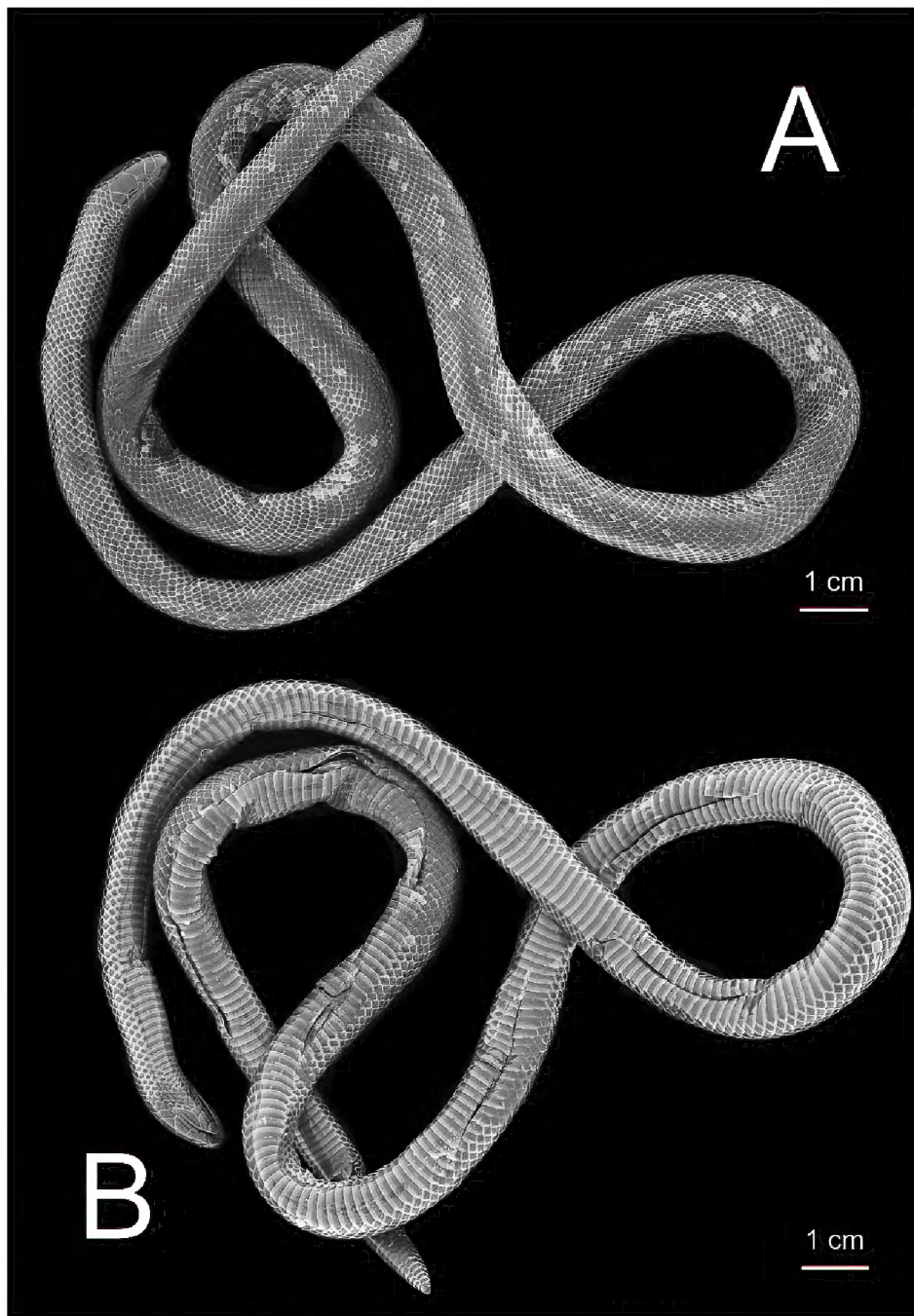


Figure 1. Preserved adult female *Atractaspis reticulata heterochilus* (RBINS 19656) from Amadjabe, DRC. **A.** General dorsal view. **B.** General ventral view. Note the extremely elongate habitus.

Morphological abbreviations: A = anal plate; AT = anterior temporals; D = divided; DSR = number of dorsal scale rows; IL = number of infralabials (followed in brackets by the number of IL in contact with the first pair of sublinguals); Juv. = juvenile; K = keeled; Lor = number of loreal scales; MSR = number of scale rows at midbody; PoO = (number of) postocular(s); PreO = (number of) preocular(s); PV = (number of) preventral(s); S = single; SC = (number of) subcaudal(s); SL = supralabial(s) (followed in brackets by the SL in contact with orbit); SubO = number of suboculars; SVL = snout–vent length; TaL = tail length; U = unkeeled; VEN = (number of) ventral scales.

Results

Squamata

Atractaspididae

Aparallactus modestus ubangensis Boulenger, 1897

R 32 (head missing), 15 January 1984; R 34, 16 January 1984; R 47, 24 January 1984; R 215, 20 July 1984; R 288–290, 22 November 1984; R 410, 3 March 1985; R 551–552, 12 August 1985; RBINS 19650, 3 March 1985; RBINS 19652, 30 September 1984; RBINS 19653, 30 June 1984; RBINS 19654–19655, 22 November 1984; RBINS 19667, 21 January 1985; RBINS 19669–19670, 30 September 1984; and RBINS 19671, 3 March 1985.

In their key to the members of the genus *Aparallactus*, Chippaux and Jackson (2019) indicated that *A. modestus* has

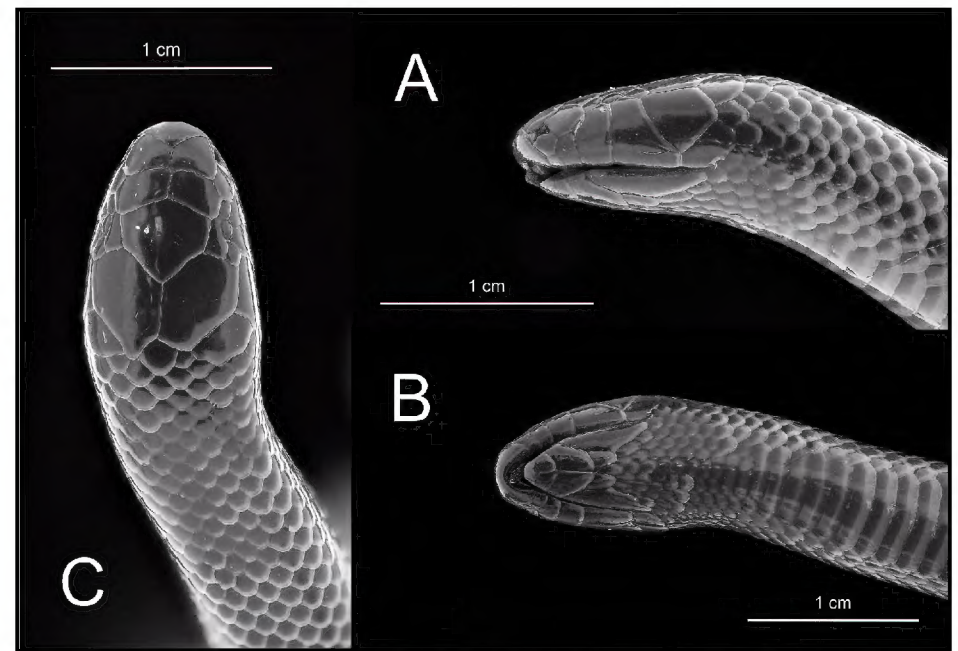


Figure 2. Head of a preserved adult female *Atractaspis reticulata heterochilus* (RBINS 19656) from Amadjabe, DRC. **A.** Left profile. **B.** Ventral view. **C.** Dorsal view. Note the single anterior temporal, and the second infralabials fused with the sublinguals.

only the 5th SL in contact with the parietal, but in the species account they mentioned that *A. modestus ubangensis* has the 5th and the 6th SL in contact with the parietal. RBINS 19650, RBINS 19652, RBINS 19655 and RBINS 19671 have indeed both the 5th and 6th SL in contact with the parietal on both head sides, but RBINS 19654 and RBINS 19667 have only the 6th SL in contact with the parietal on both sides, and RBINS 19669 has both the 5th and 6th SL in contact with the parietal on the left, but only the 6th on the right. RBINS 19670 has only the 6th in contact with the parietal on the left, and only the 5th on the right. This character was not noted for the specimens deposited in Kisangani, and is not available for RBINS 19653 due to its poor condition. RBINS 19652 has an extralabial between the 2nd and 3rd SL on the right side. Chippaux and Jackson (2019:164) also mentioned that *Aparallactus modestus* can be distinguished from other *Aparallactus* by the possession of two postoculars; it is to be noted that our Amadjabe sample includes several specimens with one postocular on one or both sides of the head. Twelve of 19 specimens in this series, i.e., 63%, have an entire tail. The tail of RBINS 19655 is remarkable because it is amputated and completely healed, with a length of only six mm and four SC. Among the 18 specimens of our series for which the sex could be defined, only four (22%) are males. RBINS 19650 is a pregnant female with six eggs located between ventrals 109 and 143. It is only the second clutch size unambiguously attributable to this subspecies, after a record of four eggs by Brecko et al. (2019). Based on the number of specimens collected in the course of this survey, this snake taxon seems the most commonly encountered in Amadjabe, after *Boaedon olivaceus*.

Atractaspis reticulata heterochilus Boulenger, 1901

R 526, 12 August 1985; and RBINS 19656, 31 January 1984.

This rarely encountered venomous, fossorial snake shows an extremely elongate habitus (Figure 1); this is the only *Atractaspis* species with more than 300 ventrals. In both specimens the 1st IL pair is in contact behind the mental, and the 2nd pair is fused with the single pair of sublinguals (Figure 2); the nasal is divided; the 4th SL is the largest. Their numbers of ventrals and subcaudals (see Appendix) agree with the figures known for the subspecies *heterochilus* (Rödel et al., 2019).

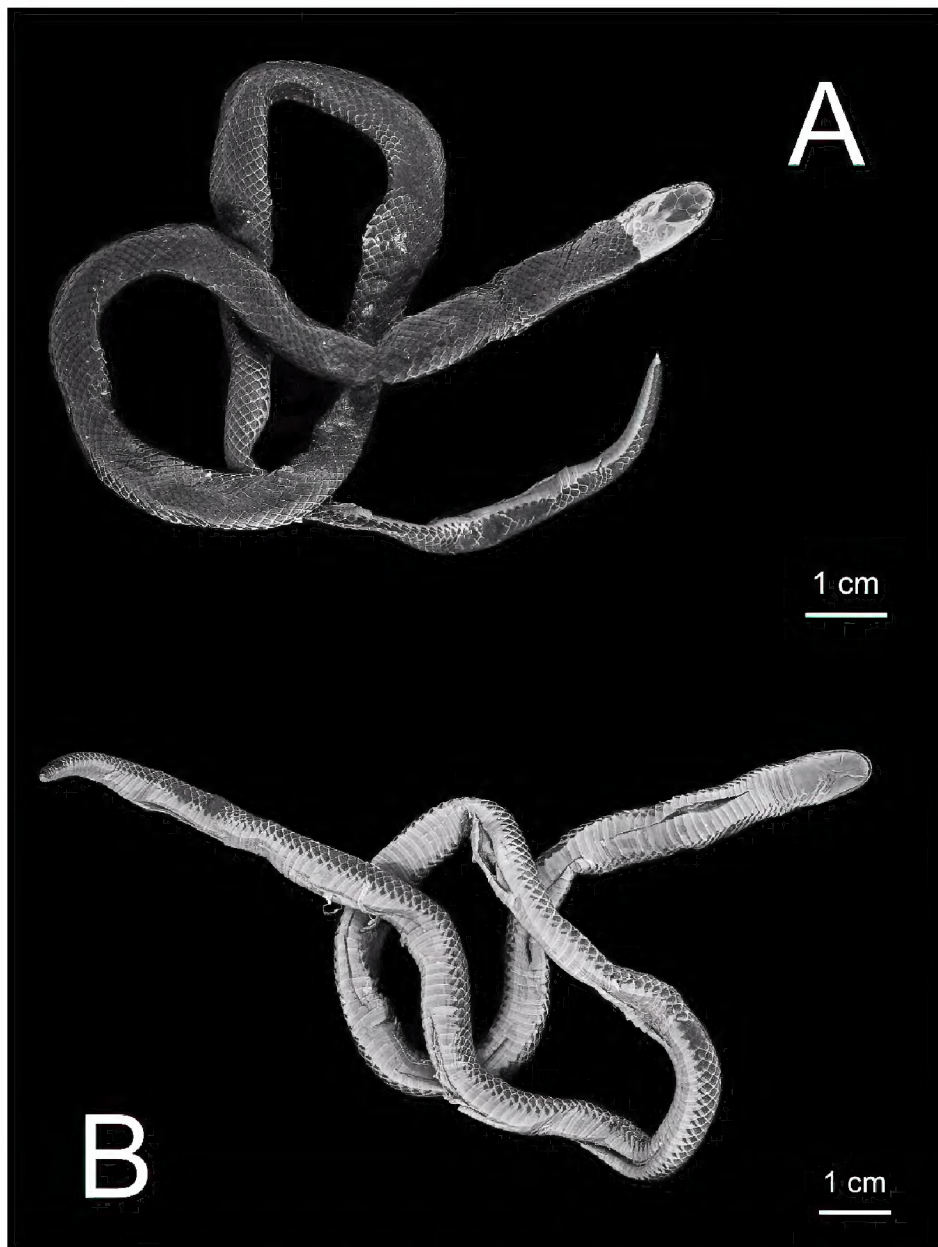


Figure 3. Preserved adult female *Polemon collaris longior* (RBINS 19659) from Amadjabe, DRC. **A.** General dorsal view, showing the nuchal collar. **B.** General ventral view, showing the black dorsal color extending to the tips of the ventrals.

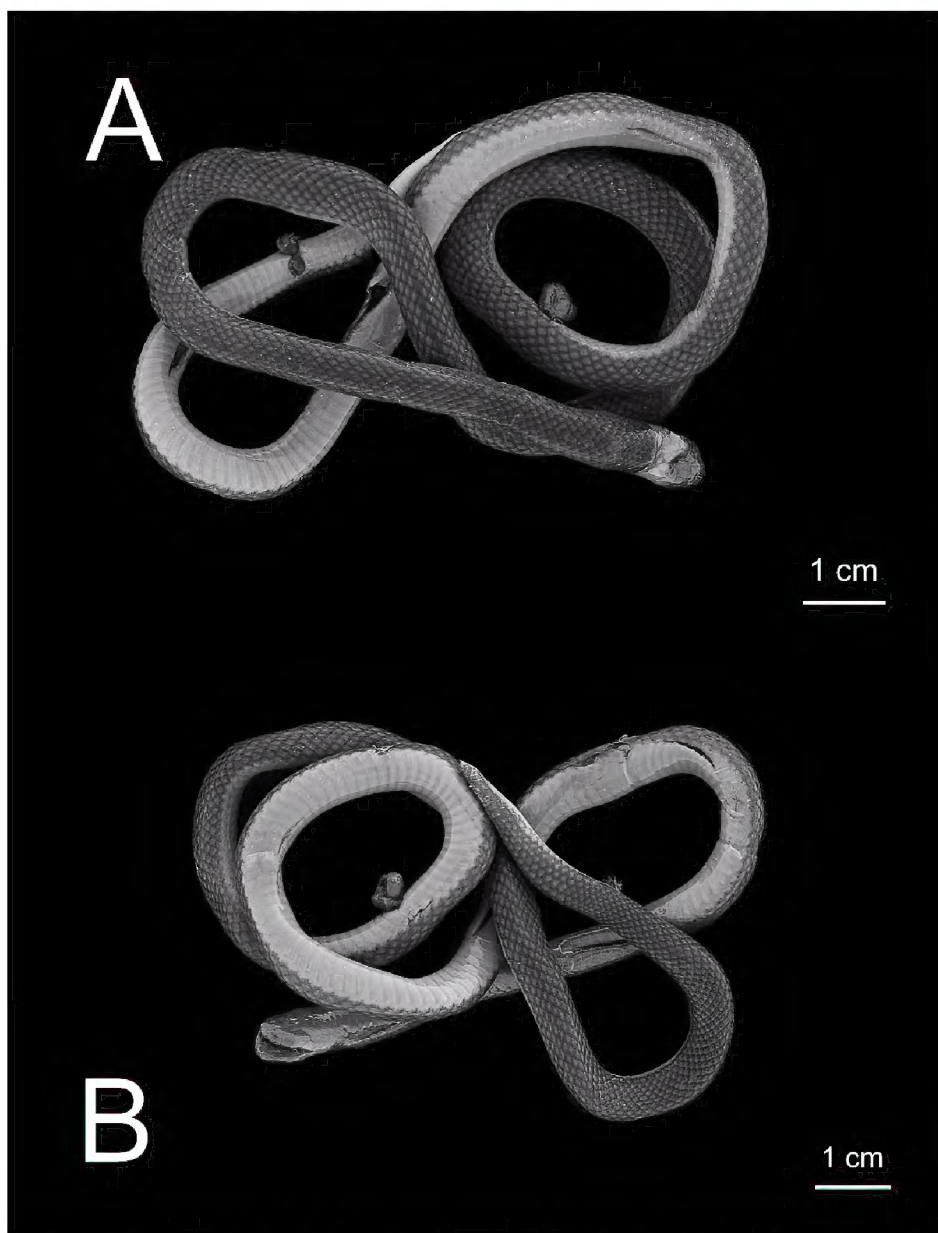


Figure 5. Preserved adult male *Polemon fulvicollis laurenti* (RBINS 19664) from Amadjabe, DRC. **A.** General dorsal view. **B.** General ventral view, showing partly everted hemipenes, and the pale venter color extending laterally to include the lower half of the first DSR.

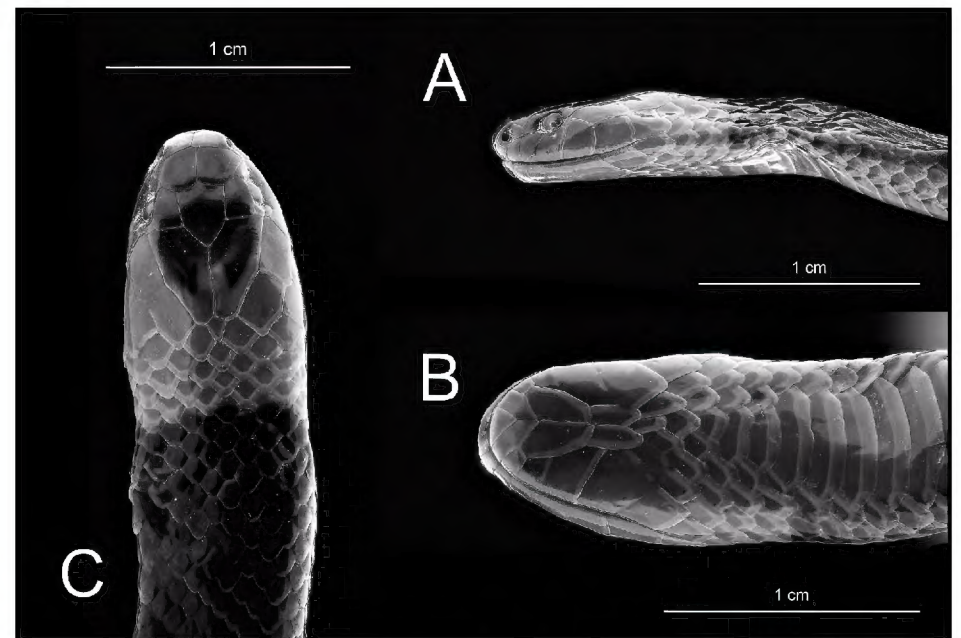


Figure 4. Head of a preserved adult female *Polemon collaris longior* (RBINS 19659) from Amadjabe, DRC. **A.** Left profile. **B.** Ventral view, showing four IL in contact on each side with the anterior sublinguals. **C.** Dorsal view.

Polemon collaris longior (de Witte & Laurent, 1947)

R 278, 22 November 1984; and RBINS 19659, 24 January 1984.

In RBINS 19659, the 6th SL is the longest; it has a pale nuchal collar (these two characters were not noted for R 278). In both specimens the temporal formula is 1+1 on both head sides, and the black dorsal color extends to the tips of the ventrals (Figures 3 and 4). Due to their high ventral numbers these specimens are referable to the poorly known eastern DRC subspecies *longior* (de Witte and Laurent, 1947).

Polemon fulvicollis laurenti Resetar & Marx, 1981

RBINS 19664, 31 January 1984.

This specimen shows a temporal formula of 1+1 on both head sides. Its 6th SL is the longest. It has a pale nuchal collar, and the pale color of the venter extends laterally to include the lower half of the 1st DSR (Figures 5 and 6). Its high number of ventrals (see Appendix) makes it referable to the rare northeastern DRC subspecies *laurenti* (de Witte and Laurent, 1947; Resetar and Marx, 1981).

Colubridae

Dasypeltis fasciata Smith, 1849

R 107 and RBINS 19726, both collected on 24 March 1984.

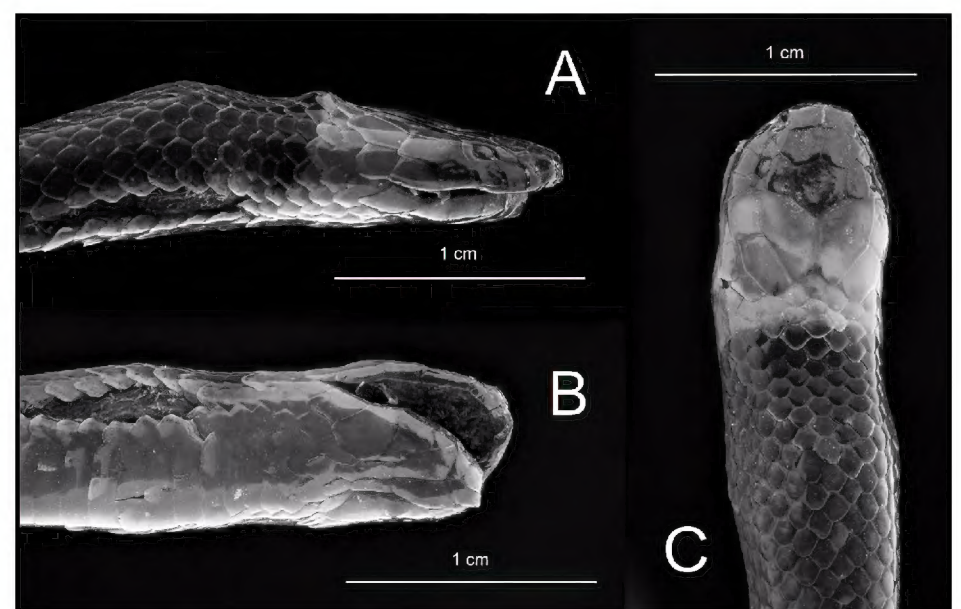


Figure 6. Head of a preserved adult male *Polemon fulvicollis laurenti* (RBINS 19664) from Amadjabe, DRC. **A.** Right profile. **B.** Ventral view. **C.** Dorsal view. The poor condition of the head is because it was killed with a machete.

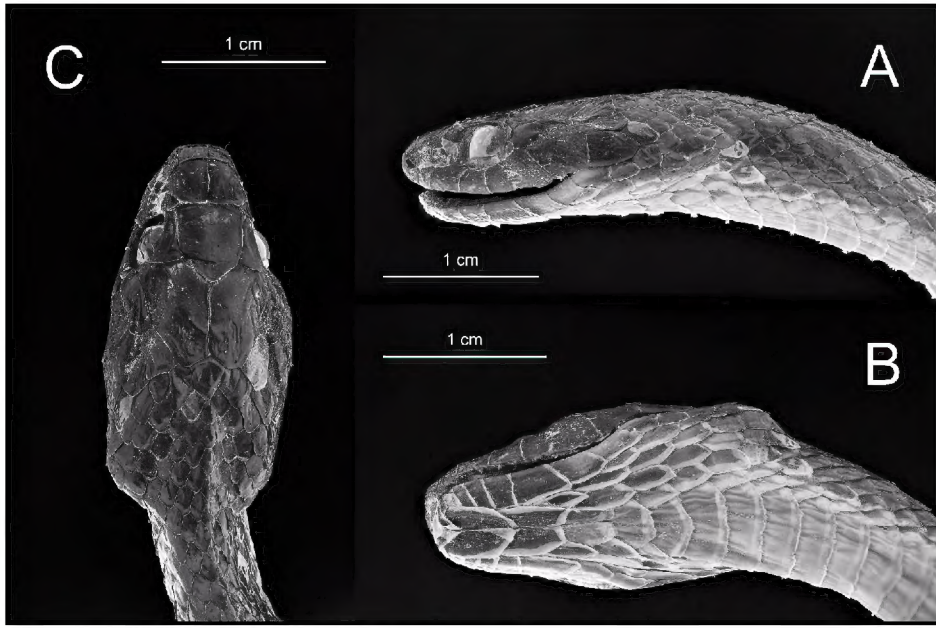


Figure 7. Head of a preserved adult male *Dipsadoboa weileri* (RBINS 19748) from Amadjabe, DRC. **A.** Left profile. **B.** Ventral view. **C.** Dorsal view.

RBINS 19726 shows a brown dorsum without blotches, but with irregular black zig-zags on the interstitial dorsal skin.

Dipsadoboa viridis gracilis Laurent, 1956

R 38, 18 January 1984; and RBINS 19811, 22 November 1984.

The frontal of RBINS 19811 is distinctly longer than wide. The high subcaudal numbers of both specimens (see Appendix) are typical of the eastern subspecies *gracilis*. The male has 2 PV + 220 VEN, and the female 222 PV + VEN; this couple of specimens hence does not confirm the statement by Chippaux and Jackson (2019:326) that in this subspecies males have more VEN than females. R 38 had eaten a *Ptychadena* sp. (Anura:

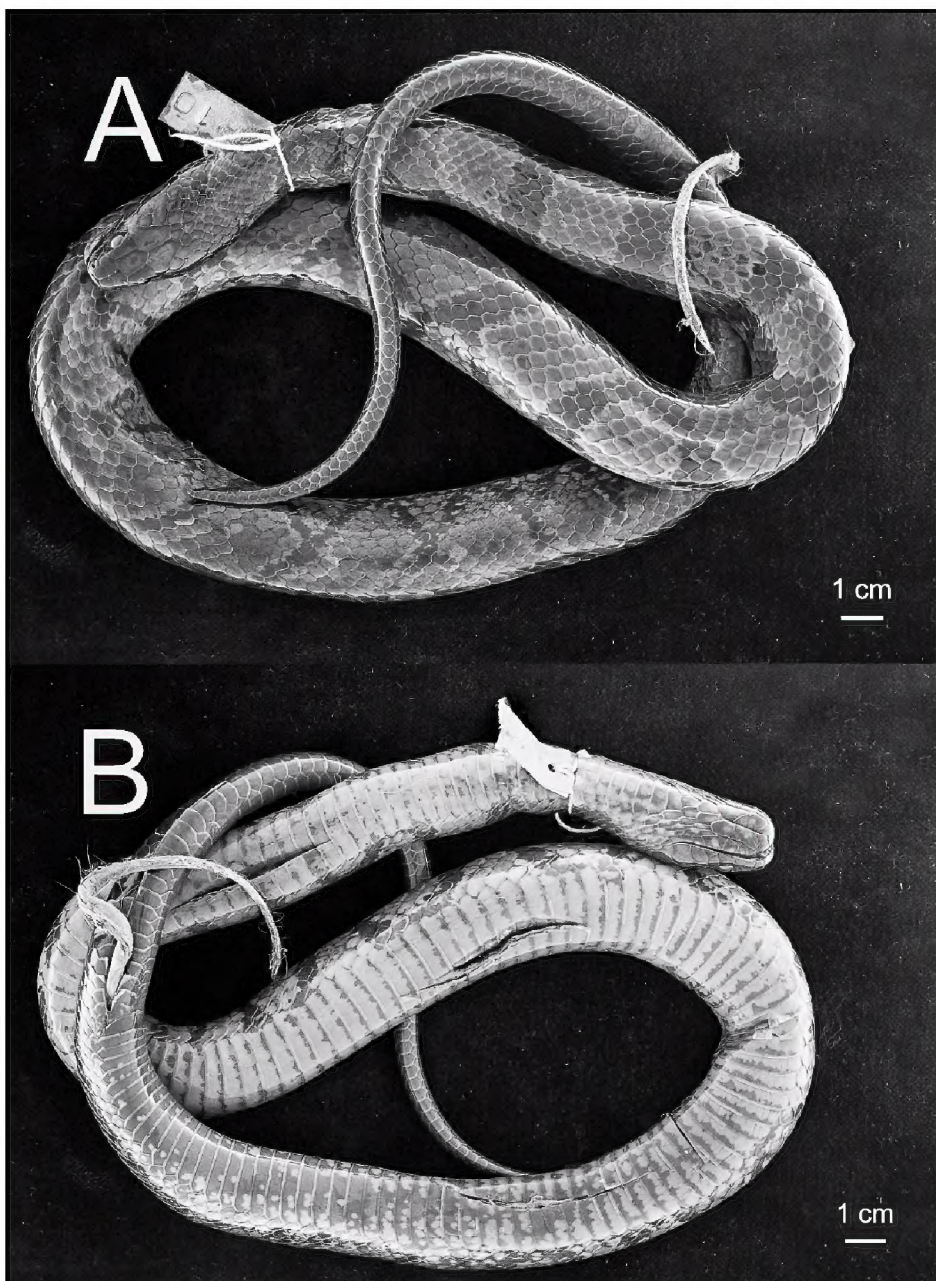


Figure 8. Preserved adult male *Grayia ornata* (RBINS 19801) from Amadjabe, DRC. **A.** General dorsal view, showing the typical banded pattern. **B.** General ventral view.

Ptychadenidae), a frog genus and family that had not yet been recorded in the diet of this snake subspecies known to feed on anurans and geckos (Laurent, 1956; Rasmussen, 1993).

Dipsadoboa weileri (Lindholm, 1905)

R 293-294, 22 November 1984; R 297, 10 September 1984; R 397, 3 March 1985; RBINS 19700, 22 November 1984; RBINS 19748 and RBINS 19810, 30 May 1984.

The frontals of the specimens deposited in the RBINS are nearly as wide as long (see Figure 7 illustrating RBINS 19748; this character was not recorded for the other specimens). Figure 7B shows anterior sublinguals of about the same length as the posterior ones (versus much longer according to Chippaux and Jackson, 2019). R 293 had eaten an anuran amphibian, not identified.

Grayia ornata Barboza du Bocage, 1866

R 102, 24 March 1984; R 201, 30 June 1984; R 217, 20 July 1984; RBINS 19648, 30 June 1984; RBINS 19649, 20 July 1984; RBINS 19683 and RBINS 19801 (Figures 8 and 9), 25 February 1984. RMCA 1987.42.R.4-5 were collected on 22 March 1987 in Lubilo River (0°4'S, 25°21'E), about five km E of Amadjabe.

All specimens show extralabials, a scalation character distinguishing this species from the other members of the African aquatic genus *Grayia*. Two females have 70 SC and one has 69, which is less than the minimum of 73 indicated by Chippaux and Jackson (2019:380) for this species. RMCA 1987.42.R.4-5 show respectively 20 and 21 furcated dorsal bands, all visible, between head and cloaca; the dorsal surface of their tail is mostly black. The tail of these latter two specimens was not dissected, but we regard them as males based on the thickness of the base of their tail. The stomach of RBINS 19648 contains a young catfish, ingested head first, whose head was mostly digested. This fish was identified as a *Clariallabes platyceps* (Steindachner, 1911) (Siluriformes: Clariidae). This prey was not yet known to be part of the dietary spectrum of this aquatic snake, and confirms its preference for Siluriformes (Pauwels et al., 2000). Several leach-like external parasites, as long as half the length of a dorsal scale, are attached to ventrals and dorsals of RMCA 1987.42.R.5.



Figure 9. Head of a preserved adult male *Grayia ornata* (RBINS 19801) from Amadjabe, DRC. **A.** Left profile. **B.** Ventral view. **C.** Dorsal view. Note the extralabial between the fourth and sixth SL visible on the ventral view.

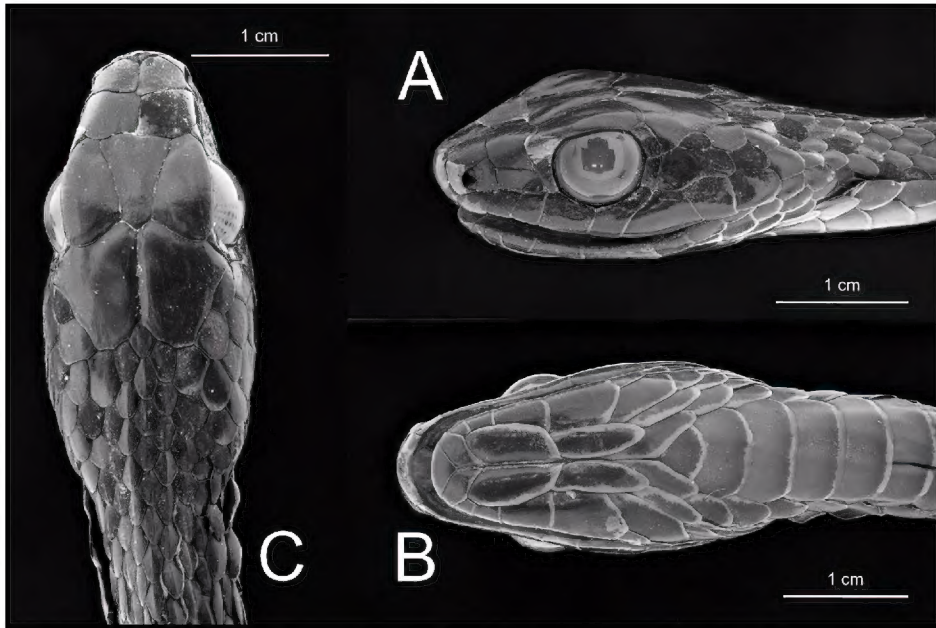


Figure 10. Head of a preserved adult female *Hapsidophrys lineatus* (RBINS 19688) from Amadjabe, DRC. **A.** Left profile, showing a single anterior temporal, an abnormal condition in this species which normally shows two. **B.** Ventral view. **C.** Dorsal view.

Hapsidophrys lineatus Fischer, 1856

R 69 and RBINS 19678, 31 January 1984; RBINS 19688 (Figure 10), 16 January 1984; RBINS 19779, 15 May 1984; RBINS 19780, 30 June 1984; and RBINS 19781, 22 November 1984.

The last ventral of RBINS 19678 is furcated on the right side. Chippaux and Jackson (2019:331) mentioned that this species has two PreO, but only two out of our six specimens have two, the others having a single PreO.

Hapsidophrys smaragdinus (Schlegel, 1837)

R 9, 25 February 1984; R 405-406, 3 March 1985; RBINS 19677, 24 January 1984; RBINS 19698, 30 March 1985; RBINS 19747, 30 September 1984; and RBINS 19782, 21 January 1984.

RBINS 19677 shows an extralabial on each side, between the two posteriormost SL. In RBINS 19782 (Figure 11) there is a fusion between the loreal and the prefrontal on both sides, and on the right side the parietal contacts the 7th and 8th SL.

Philothamnus carinatus (Andersson, 1901)

R 53, 25 January 1984; R 104-105, 24 March 1984; R 191, 30 June 1984; RBINS 19646, 22 November 1984; RBINS 19749, 30 September 1984; and RBINS 19767, 20 January 1984.

On the right side of the head of RBINS 19767, the lower postocular is not in contact with a temporal, so technically it can



Figure 12. Head of a preserved adult female *Philothamnus carinatus* (RBINS 19646) from Amadjabe, DRC. **A.** Right profile. **B.** Ventral view. **C.** Dorsal view.



Figure 11. Head of a preserved adult female *Hapsidophrys smaragdinus* (RBINS 19782) from Amadjabe, DRC. **A.** Right profile, showing no anterior temporal while in this species one anterior temporal is the normal condition, as well as a fusion between the loreal and the prefrontal, also an abnormal condition. **B.** Ventral view. **C.** Dorsal view.

be regarded as a subocular; this specimen has its hemipenes partly everted. The head of RBINS 19646 is illustrated in Figure 12, showing the single preocular not in contact with the frontal, three SL in contact with the orbit, the two anterior temporals, and anterior sublinguals slightly longer than the posterior ones.

Rhamnophis aethiopissa ituriensis Schmidt, 1923

R 195, 30 June 1984; R 256, 30 September 1984; R 407, 3 March 1985; R 542, 12 August 1985; RBINS 19701, 22 November 1984; and RBINS 19804 (Figure 13), 15 January 1984.

All specimens of our series show a widened vertebral row. R 542 showed only 13 MSR, while the eastern subspecies *ituriensis* typically shows 15, and the nominal, western subspecies 17. Laurent (1956:191) also mentioned a specimen with 13 MSR among a series of 15 specimens of this subspecies from eastern DRC, all others showing 15 MSR. The hemipenes of RBINS 19804 are partly everted.

Thelotornis kirtlandii (Hallowell, 1844)

RBINS 19778, 24 January 1984.

This is a pregnant female, containing four well-developed eggs. There is an extra half-ventral on the left side just before the anal, not included in the VEN number. The subocular is in a postocular position, but does not contact the anterior temporal.

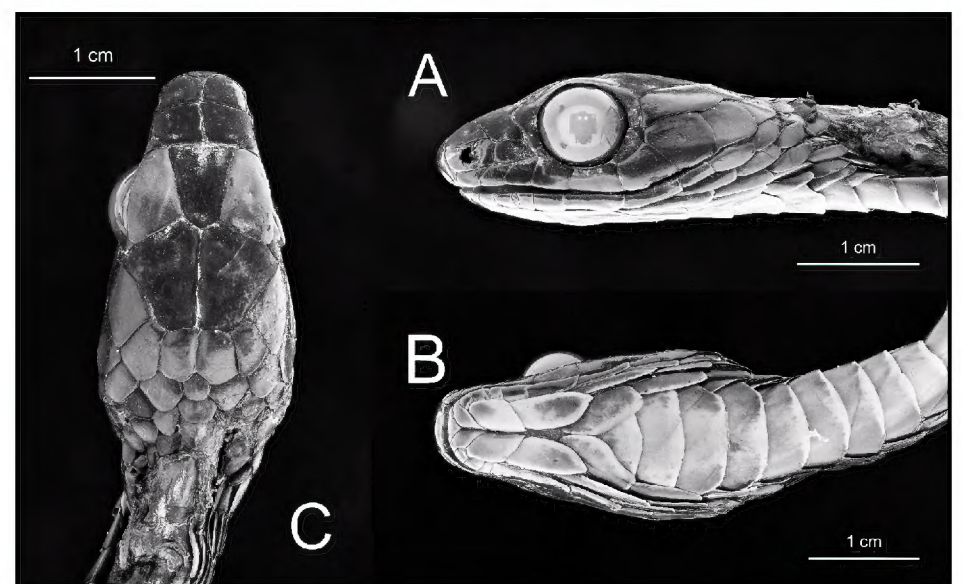


Figure 13. Head of a preserved adult male *Rhamnophis aethiopissa ituriensis* (RBINS 19804) from Amadjabe, DRC. **A.** Left profile. **B.** Ventral view. **C.** Dorsal view. The neck is damaged because this snake was killed by villagers with a machete.

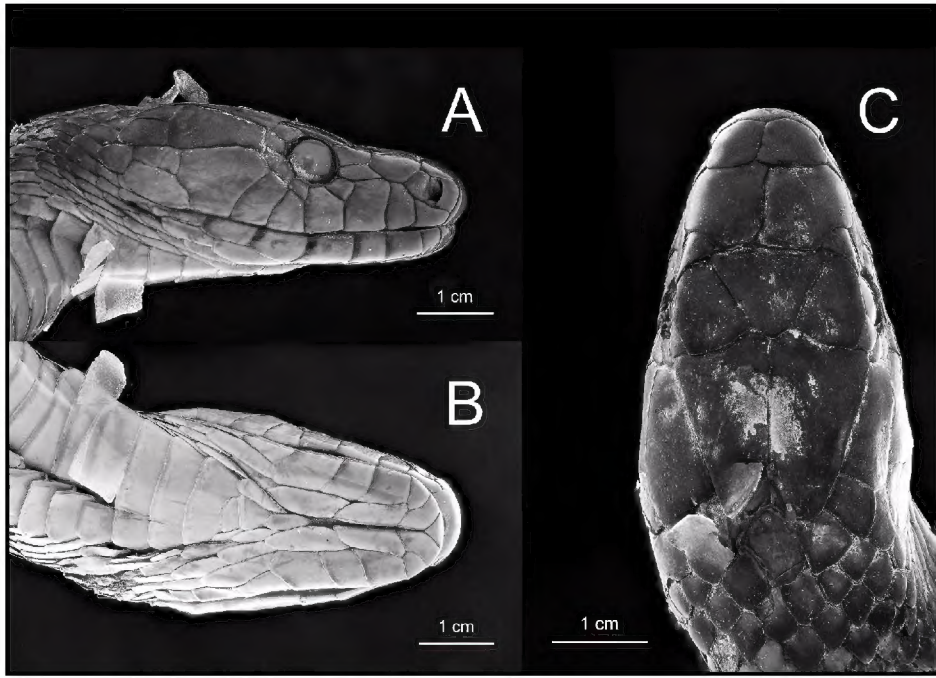


Figure 14. Head of a preserved adult *Dendroaspis jamesoni* (RBINS 19597) from Amadjabe, DRC. **A.** Right profile. **B.** Ventral view. **C.** Dorsal view.

Thrasops jacksonii Günther, 1895

R 398, 3 March 1985.

This specimen, which was black with yellow spots in life, exhibited the typical coloration of young individuals of this species (Carlino and Pauwels, 2013).

Elapidae

Dendroaspis jamesoni (Traill, 1843)

RBINS 19597, 22 November 1984.

Only the head and neck of this adult specimen, shown in Figure 14, were brought to MC by the villagers who killed it, precluding measurements and scale counts on body and tail, and hence a subspecific allocation.

Naja annulata annulata Peters, 1876

R 56, 26 January 1984.

This adult individual was found drowned in a fishing net. Its anal scale and some of the subcaudals had been eaten by fish before it was removed from the net, preventing a precise SC count. It showed 26 black rings between head and cloaca; no rings were visible on the tail.

Naja melanoleuca Hallowell, 1857

R 198, 30 June 1984; R 276, 22 November 1984; R 301, 30 September 1984; R 319, 21 January 1985; R 543, 12 August 1985; and RBINS 19775, 31 January 1984.

On the left side of the head of RBINS 19775 the 3rd and 4th SL are fused and were counted as one; on each side its suboculars occupy the position of postoculars, but do not contact the anterior temporal.

Lamprophiidae

Boaedon olivaceus (Duméril, 1856)

R 37, R 55 and R 57, 27 January 1984; R 68, 31 January 1984; R 171-172, 19 May 1984; R 194 and R 196, 30 June 1984; R 280-281, 20 November 1984; R 403-404, 3 March 1985; R 546-550, 12 August 1985; RBINS 19713, 20 November 1984; RBINS 19718, 24 March 1984; RBINS 19719, 20 July 1984; RBINS 19724, 30 June 1984; RBINS 19727, 20 November 1984; RBINS 19756, 31 January 1984; and RBINS 19758, 20 July 1984.

On the right side of the head of RBINS 19713, the loreal

contacts the orbit and is rather to be regarded as a PreO. RBINS 19756 has an additional half ventral on the left side just before the anal, not counted. Only one of the 24 specimens examined (i.e., 4%) does not have an entire tail. There is a clear sexual dimorphism in the VEN number in our series, males ($n = 8$) having 185–199 and females ($n = 16$) 202–214 VEN; and in the SC number, males ($n = 8$) having 51–58 and females ($n = 15$) 39–45 SC. There seems also to be a certain dimorphism for the MSR; while all males ($n = 8$) have 27 MSR, among the 16 females, nine show 27 MSR, one 28 MSR and six 29 MSR. The stomachs of R 171, RBINS 19719 and RBINS 19758 each contained a rodent (Rodentia: Muridae) ingested head first. The stomachs of RBINS 19713 and RBINS 19724 contain each a micromammal ingested head first. RBINS 19713 is a pregnant female containing several eggs at an early development stage. Based on the number of specimens obtained during this study, *Boaedon olivaceus* seems to be the most common snake species in Amadjabe.

Bothrophthalmus lineatus (Peters, 1863)

R 6, 25 February 1985; R 311, 30 September 1984; and R 540, 12 August 1985. RMCA 1987.42.R.2 was collected on 22 March 1987 along Uluko River ($0^{\circ}4'S$, $25^{\circ}21'E$), about eight km N-E of Amadjabe. RMCA 1987.42.R.3 was collected on 22 March 1987 along Lubilo River ($0^{\circ}4'S$, $25^{\circ}21'E$), about five km E of Amadjabe.

Only one of the five specimens we examined (i.e., 20%) has an entire tail. We did not dissect the tail of RMCA 1987.42.R.2, but we regard it as a male based on the thickness of the base of its tail. All specimens exhibit a contrasted striped dorsal pattern. We regard *Bothrophthalmus lineatus* as specifically distinct from *B. brunneus* Günther, 1863, while some authors such as Chippaux and Jackson (2019) regard them as color forms of a variable, widespread species, although these forms do not geographically overlap and no hybrid is known (Hughes, 2000). The stomach of RMCA 1987.42.R.3 contains a micromammal.

Chamaelycus fasciatus (Günther, 1858)

RBINS 19695, 25 January 1984.

This specimen shows a vertically elliptical pupil and an undivided nasal. Its frontal, subtriangular, is slightly wider than long; the right loreal contacts the orbit and can be regarded as a PreO; on both sides the anterior temporal contacts the orbit and must hence be counted as a PoO; there are two apical pits per dorsal scale. The dorsum, dark grey in life, shows irregular, narrow black bands, of a length of two dorsals. This individual was unearthed during the felling of a large tree in primary forest.

Chamaelycus parkeri (Angel, 1934)

RBINS 19696, 28 May 1984.

This individual is a pregnant female with two well-developed eggs located between VEN 148 and 164. It shows a vertically elliptical pupil; a frontal as wide as long; an upper postocular smaller than the lower one; and a temporal formula of 1+2 on both sides. It has only one apical pit per dorsal while Chippaux and Jackson (2019) indicated that this species has two apical pits per dorsal. The dorsum, light gray in life, shows irregularly disposed black patches of a length of three to four dorsals. On the left side, there are 21 patches before the cloaca and five on the tail; on the right side 18 before the cloaca and six on the tail.

Chippaux and Jackson (2019) mentioned a maximum length of 312 mm for this rare species. Although it is not indicated in the methodology section of their book, the maximum length indicated by Chippaux and Jackson (2019) is the total length, tail included, not the SVL (Chippaux, pers. comm. to OSGP, December 2022). The total length of our specimen, 372 mm, is thus distinctly higher than the known maximum length indicated by Chippaux and Jackson (2019). Its dorsal pattern is similar to that of the specimen from Kisangani described by Laurent (1956), and agrees with that of the type of the species described by Angel (1934); Chippaux and Jackson (2019: 203) erroneously stated that the dorsum of this species is “uniformly brown.”

Gonionotophis brussauxi prigoginei Laurent, 1956
RBINS 19676, 25 January 1984.

This male specimen has partially everted hemipenes. Its vertebral row is widened. Based on its high VEN number (182), this individual is referable to the poorly known eastern subspecies *G. brussauxi prigoginei* Laurent, 1956, described from South Kivu, but its SC number (86) belongs to the variation known for the nominal subspecies, described from the Republic of Congo on the right bank of the Congo River near the Atlantic Ocean (Laurent, 1956; Chippaux and Jackson, 2019). Some authors, including Wallach et al. (2014) regard these subspecies as synonyms, while we regard the eastern subspecies as valid (Ineich et al., 2007), pending a taxonomic revision.

Hormonotus modestus (Duméril, Bibron & Duméril, 1854)
RBINS 19647, 30 September 1984.

The vertebral row of this specimen is enlarged. Its stomach contains an adult *Trachylepis maculilabris* (Gray, 1845) (Scincidae) ingested head first, showing supranasals in contact with each other, prefrontals in contact with each other, and five keels on each dorsal scale. Although it has a wide distribution, this species seems everywhere to be rarely encountered.

Limaformosa savognani (Mocquard, 1887)
R 295, 30 September 1984; and RBINS 19687, 22 November 1984.

RBINS 19687 has an additional half-ventral on the right side just before the anal, not included in the VEN count. It also shows on both sides three SL, i.e., the 3rd to the 5th, in contact with the orbit (although the contact is only through a point for the 5th SL on the right side), while the normal condition is that only two SL contact the orbit (Chippaux and Jackson, 2019). Both specimens show a widened vertebral row with two keels.

Lycophidion ornatum Parker, 1936
RBINS 19651, 28 May 1984. RMCA 1987.42.R.6 was collected on 22 March 1987 in Lubilo River (0°4'S, 25°21'E), about five km E of Amadjabe.

Both specimens show a divided nasal; zero to five, but most often three, apical pits per dorsal; two irregular brown lateral lines on head; and a dorsum with two irregular alignments of black dots, about 50 to 100% the size of a dorsal each. Their 1st SL is separated from the postnasal; their loreal is longer than high; the prefrontals are as broad as long, and the frontal is about as long as wide. The 4th and 5th SL have a large contact with the orbit, but the 3rd and 6th are well separated from it by the PreO and the lower PoO, respectively. On each side of both specimens, the preocular is in wide contact with the prefrontal

and the frontal. The temporal formula of RBINS 19651 is 1+2+3 on each side; in RMCA 87-42-R-6, it is 1+2+3 on the left, and 1+3 on the right. In preservative, their venter is black, with a lighter transversal band along the posterior part of each ventral. Using the identification key provided by Meirte (1992), they are identified as *Lycophidion laterale* because they have only two SL in contact with the orbit, however with a too high VEN number (Meirte 1992:78 indicated a variation of 170–187 while our specimens have 199–200). For the same reason they key out as *Lycophidion laterale* using the key provided by Broadley (1996) and by Chippaux and Jackson (2019, but then the dorsal pattern of our specimen, showing two lines of dots, does not agree with the uniform brown dorsum color as rightly described by these latter authors and illustrated on their figure 10.59 on p. 229 showing a specimen from the Republic of Congo). The original description of *Lycophidion laterale* by Hallowell (1857), based on a specimen from western Gabon, does not mention any dorsal pattern; the absence of pattern can also be seen on a live individual from western Gabon illustrated by Pauwels and Vandeweghe (2008:213). It is to be noted that in the original description of *Lycophidion ornatum*, based on numerous type specimens, Parker (1936) also did not make any mention of a dorsal pattern. With the exception of the higher number of apical pits and only two SL in contact with the orbit, our Amadjabe specimens agree with the diagnosis of *Lycophidion ornatum* given by Broadley (1996), to which we refer them. The total length of RMCA 1987.42.R.6 (568 mm) is moreover distinctly higher than the maximum total length of 500 mm mentioned by Chippaux and Jackson (2019) for *Lycophidion laterale*, but close to the maximum of 590 mm they gave for *L. ornatum*. The stomach of RBINS 19651 contains a three-keeled adult *Trachylepis* sp. ingested head first, whose anterior half is digested. Its low number of keels per dorsal scale precludes an identification of this skink as a *Trachylepis maculilabris*.

Mehelya poensis (Smith, 1849)
RBINS 19806, 31 January 1984.

The vertebral row of this specimen is widened and shows a double keel.

Pythonidae
Python sebae (Gmelin, 1789)
R 210, 20 July 1984.

Typhlopidae
Afrotyphlops cf. *angolensis* (Bocage, 1866)
R 399-400, 3 March 1985; RBINS 19735, 31 May 1984; and RBINS 19742, 12 January 1984.

R 399 showed a SVL of 349 mm, a TaL of 5 mm, a midbody diameter of 13 mm, and 25-23-22 smooth scale rows around body. R 400 showed a SVL of 313 mm, a TaL of 7 mm, a midbody diameter of 10 mm, and 26-23-22 smooth scale rows. RBINS 19735 shows a SVL of 332 mm, a TaL of 5 mm, 304 dorsal scales between the frontal and a point above the cloaca, 24-25-22 smooth scale rows around body, and eight SC. RBINS 19742 shows a SVL of 266 mm, a TaL of 6 mm, 275 dorsal scales between the frontal and a point above the cloaca, 26-26-22 smooth scale rows around body, and ten SC. Both RBINS 19735 and RBINS 19742 show a snout rounded in profile,

lacking a keratinized edge; eyes clearly visible through the preocular and ocular scales; a broad dorsal rostral, wider than half the interocular distance; laterally pierced nostrils; no subocular separating the preocular from the 2nd and 3rd SL; a preocular overlapped by the 2nd SL; an ocular about twice the size of the preocular; a supraocular with a lateral apex between the preocular and the ocular; an inferior nasal suture contacting the 1st SL; and 4/4 SL. All specimens show a uniform reticulate dorsal pattern forming black lines along the whole dorsum, fading on flanks, disappearing on lower flanks. Using the key and morphological description provided by Broadley and Wallach (2009), our specimens would be identifiable as *Afrotyphlops angolensis* if their number of dorsal scales between the frontal and a point above the cloaca was distinctly higher. Because the other morphological data and their pattern put them closer to *A. angolensis*, we tentatively and provisionally identify them as *A. cf. angolensis*.

Afrotyphlops congestus (Duméril & Bibron, 1844)

R 45, 24 January 1984; and RBINS 19743, 23 January 1984.

R 45 showed a SVL of 275 mm, a TaL of 5 mm, a midbody diameter of 12 mm, and 28 smooth scale rows around midbody. RBINS 19743 shows a SVL of 281 mm, a TaL of 5 mm, and a midbody diameter of 13 mm. Its eyes and pupils are clearly visible through the preocular and the ocular scales. Its snout is rounded in dorsal view, obtusely angular in lateral view, and lacking a keratinized edge. The dorsal rostral is broad, nearly as broad as the interocular distance, and truncated posteriorly. The nostril is pierced laterally. The inferior nasal suture contacts the rostral. It has 4/4 SL. The preocular is not overlapped by the 2nd SL. No subocular separates the preocular from the 2nd and 3rd SL. The ocular is about twice the size of the preocular. The supraocular is transverse, with its lateral apex between the preocular and the ocular. There are 360 scales between the frontal and a point above the cloaca, 32-28-24 smooth scale rows around the body, and nine SC. Both specimens show a marbled dorsum and an immaculate venter.

Viperidae

Atheris squamigera (Hallowell, 1854)

R 165, 30 May 1984; and RBINS 19596, 30 September 1984.

RBINS 19596 shows 14/14 circumorbital scales; a single scale row between the SL and the orbit; six interorbital scales; a single pair of sublinguals; and keeled gulars. Seven scales surround its rostral. These characters have not been noted for R 165.

Bitis gabonica (Duméril, Bibron & Duméril, 1854)

R 39, 19 January 1984.

Bitis nasicornis (Shaw, 1802)

R 42, 20 January 1984; R 50, 24 January 1984; R 213, 20 July 1984; R 306-307 and R 309, 30 September 1984; R 402, 3 March 1985; R 541, 12 August 1985; RBINS 19798, 25 February 1984; RBINS 19799, 20 July 1984; and RBINS 19800, 30 September 1984.

RBINS 19798, RBINS 19799 and RBINS 19800 have a minimum of 4/5, 4/4 and 5/5 rows of scales between the SL and the orbit, respectively. They show 17/16, 17/19 and 18/16 circumorbitals, respectively. All three show 13 interoculars, and three pairs of horns on the snout. RBINS 19799 and RBINS



Figure 15. Head of a preserved adult female *Causus lichtensteini* (RBINS 19723) from Amadjabe, DRC. **A.** Left profile. **B.** Ventral view. **C.** Dorsal view. The cut on the throat is due to the fact that it has been killed with a machete.

19800 are juvenile male and female, respectively, and still show an umbilical scar, located on ventrals 113-115 and 119-123, respectively.

Causus lichtensteini (Jan, 1859)

R 40, 19 January 1984; R 176 and R 178, 30 May 1984; R 216, 20 July 1984; R 285, 22 November 1984; R 364, 30 November 1984; R 545, 12 August 1985; RBINS 19666, 30 September 1984; RBINS 19703, 30 June 1984; RBINS 19721, 25 February 1984; RBINS 19722-19723 and RBINS 19733, 31 January 1984; RBINS 19755 and RBINS 19760, 30 May 1984; and RBINS 19761, 31 January 1984.

Of the 16 specimens available for this study, seven (44%) are males. The dorsals on the anterior third or half of the body are not keeled, while the posterior dorsals show weak keels, more pronounced in the males. Sometimes the dorsals keels are nearly not visible, such as in the female RBINS 19666. In our series, there is also an obvious sexual dimorphism in the VEN numbers (133-140 in males, 141-149 in females) and in the SC numbers (19-22 in males, 14-18 in females). RBINS 19666 and RBINS 19703 each have an additional half SC on the left side between the 1st and 2nd SC, not included in the SC count. RBINS 19761 has an additional half VEN on the right side just before the A, not included in the VEN count. RBINS 19666 has a single, well-developed egg, located between VEN 115 and 128. The stomach of RBINS 19722 contains the legs and posterior body of an adult arboreal frog of the genus *Leptopelis* Günther, 1859 (Arthroleptidae) ingested head first. The frog's head and forebody were digested; its feet are strongly webbed, and it lacks a calcar on the heel. *Causus lichtensteini* seems to be very common in Amadjabe, where only *Aparallactus modestus ubangensis* and *Boaedon olivaceus* were found in larger numbers. Figure 15 illustrates RBINS 19723 and shows internasals longer and narrower than the prefrontals, a single, elongate subocular, and six circumoculars.

Causus maculatus (Hallowell, 1842)

R 36, 18 January 1984; R 51, 24 January 1984; R 317, 21 January 1985; R 401, 3 March 1985; R 453-455, 9 May 1985; R 544, 1985 (day not known); RBINS 19598-19599, 30 March 1985; RBINS 19699, 30 May 1984; and RBINS 19716, 22 November 1984.

In RBINS 19598 and RBINS 19716, the suture between the internasals is distinctly longer than the suture between prefrontals; in RBINS 19599 and RBINS 19699, these sutures have approximately the same length (this character was not noted for the specimens deposited in Kisangani). Even in the absence of suboculars, there is no contact between the SL and the orbit, because other scales occupy their position, extending under the eye. Keels are found on dorsals along the whole body, but more developed posteriorly, and more developed in males than in females. Subcaudals are mostly divided, but often with undivided subcaudals on the anterior and posterior parts of the tail. All specimens show a V-shaped mark, pointing anteriorly, on the dorsal surface of the head.

Incertae sedis

Buhoma depressiceps (Werner, 1897)

RBINS 19658, 3 March 1985.

Two small pieces of the skin of the belly are missing, preventing an exact VEN count. The upper PoO is distinctly larger than the lower one. The temporal formula is 1+2 on both head sides. There is a light spot on each SL and IL. The dorsal pattern is striped. This miniature snake species is everywhere uncommonly encountered.

Discussion

Aparallactus modestus is represented in Amadjabe by its eastern subspecies *ubangensis* described from Zongo, on the left bank of the Ubangi River, and which likely represents a distinct species (Portillo et al., 2018; Greenbaum et al., 2021), as it was originally regarded by Boulenger in 1897. *Polemon collaris* is represented by its subspecies *longior* discovered in from northeastern DRC (de Witte and Laurent, 1947). *Polemon fulvicollis* is represented by its eastern subspecies *laurenti*, described from northeastern DRC (de Witte and Laurent, 1947; Resetar and Marx, 1981), which is genetically strongly divergent from the nominal subspecies (Portillo et al., 2019). The arboreal colubrid *Dipsadoboa viridis* is represented by its eastern subspecies *gracilis* whose type-locality is Teturi on the left bank of the Aruwimi River in Ituri Province (Laurent, 1956). Rasmussen (1993) and Chippaux and Jackson (2019) suggested that this eastern form of *Dipsadoboa viridis* is separated from the western nominate subspecies by the Congo and Ubangi rivers. *Rhamnophis aethiopissa* is represented by its eastern subspecies *ituriensis* described from northeastern DRC, originally as a distinct species (Schmidt, 1923). *Gonionotophis brussaui* is represented by its eastern subspecies *prigoginei* found east of the Congo and Ubangi rivers.

The ophidiofauna of Amadjabe is typical of localities east of the confluence of the Congo and Ubangi rivers which together represent a biogeographic filter for snakes, separating them from northwestern populations, as recently shown in a revision of the arboreal colubrid genus *Toxicodryas* Hallowell, 1857 (Greenbaum et al., 2021). This influence is strongest on the left bank of the Congo River, and is probably more marked in arboreal and aquaphobic snakes. Many snake genera and species should be reviewed with the help of genetics to better understand the impact of this biogeographical filter on the phylogenetic relationships between the populations on both sides. A number of taxa currently regarded as synonyms should probably be re-evaluated, and some species described. It is expected that the various genera and species, according to their ecology, morphology and swimming abilities, will be differently affected by the obstacle represented by rivers, as was shown for rodents or shrews (Nicolas and Colyn, 2006; Gambalemoke et al., 2008). Although very diverse, the present collection of snakes from Amadjabe, opportunistically gathered during a mammalogical survey, does not represent a complete inventory of the local snake fauna. Based on the snake fauna documented for the region, a targeted herpetological survey would without doubt reveal the presence of members of the genera *Calabaria* Gray, 1858 (Boidae), *Hydraethiops* Günther, 1872 and *Natriciteres* Loveridge, 1953 (Natricidae), *Letheobia* Cope, 1869 (Typhlopidae), *Scaphiophis* Peters, 1870 and *Toxicodryas* (Colubridae), *Pseudohaje* Günther, 1858 (Elapidae), and additional members of the genera *Atractaspis* Smith, 1849, *Boaedon* Duméril, Bibron and Duméril, 1854, *Dipsadoboa* Günther, 1858, *Grayia* Günther, 1858 and *Philothamnus* Smith, 1847, at least.

Even if more species should be added in the future, this report already documents the richness of the snake fauna that can be found in a single locality in the still largely understudied Congolese rainforest, and provides elements for a discussion on the importance of the Congo and Ubangi rivers as a zoogeographical filter.

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Appendix

Morphological data for snakes (except Typhlopidae) collected in Amadjabe, Democratic Republic of the Congo. Measurements in mm. FF indicates pregnant females. NA = not available/not assessed. For the other abbreviations see Materials and Methods. For R specimens, preventrals and ventrals are not separated.

Species / Specimen	Sex	SVL	TaL	DSR	PV+VEN	A	SC	SL	IL	Lor	PreO	SubO	PoO	AT
Atractaspididae														
<i>Aparallactus modestus</i> <i>ubangensis</i>														
R 32	F	NA	NA	15-15-15, U	ca. 152, U	S	41, S, U	NA	NA	NA	NA	NA	NA	NA
R 34	M	369	95	15-15-15, U	141, U	S	54, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
R 47	Juv.	NA	NA	15-15-15, U	146, U	S	41, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	NA	0/0	NA	0/0
R 215	F	NA	NA	15-15-15, U	159, U	S	>20, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	NA	0/0	NA	0/0
R 288	F	395	75	15-15-15, U	158, U	S	43, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
R 289	F	NA	NA	15-15-15, U	155, U	S	>41, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	1/1	0/0
R 290	F	NA	NA	15-15-15, U	157, U	S	>19, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
R 410	F	NA	NA	15-15-15, U	153, U	S	39, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
R 551	F	NA	NA	15-15-15, U	157, U	S	>37, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
R 552	F	NA	NA	15-15-15, U	157, U	S	40, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
RBINS 19650	FF	380	68	15-15-15, U	2+160, U	S	45, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
RBINS 19652	F	249	50	15-15-15, U	0+157, U	S	44, S, U	7(3-4)/6(3)	6(4)/6(4)	0/0	1/1	0/0	2/1	0/0
RBINS 19653	F	285	>23	15-15-15, U	1+154, U	S	>16, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	NA/2	0/0
RBINS 19654	F	387	73	15-15-15, U	1+157, U	S	43, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	2/2	0/0
RBINS 19655	F	313	>6(!)	15-15-15, U	1+153, U	S	>4, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	1/1	0/0
RBINS 19667	M	354	>68	15-15-15, U	1+137, U	S	>33, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	1/2	0/0
RBINS 19669	F	231	41	15-15-15, U	1+159, U	S	42, S, U	7(3-4)/7(3-4)	6(4)/6(4)	0/0	1/1	0/0	1/1	0/0
RBINS 19670	M	250	58	15-15-15, U	1+137, U	S	46, S, U	7(3-4)/6(3-4)	6(4)/6(4)	0/0	1/1	0/0	1/1	0/0
RBINS 19671	M	283	71	15-15-15, U	1+135, U	S	48, S, U	7(3-4)/7(3-4)	6(4)/NA	0/0	1/1	0/0	2/2	0/0
<i>Atractaspis reticulata</i> <i>heterochilus</i>														
R 526	F	869	36	19-23-19, U	343, U	D	21, D, U	5(3-4)/5(3-4)	4/4	0/0	1/1	0/0	1/1	1/1

Appendix 1 (cont'd)

Species / Specimen	Sex	SVL	TaL	DSR	PV+VEN	A	SC	SL	IL	Lor	PreO	SubO	PoO	AT
RBINS 19656	F	507	24	19-23-20, U	4+338, U	D	23, D, U	5(3-4)/5(3-4)	4/4	0/0	1/1	0/0	1/1	1/1
<i>Polemon collaris longior</i>														
R 278	F	709	32	15-15-15, U	235, U	D	16, D, U	7(3-4)/7(3-4)	7(4)/7(4)	0/0	1/1	0/0	2/2	1/1
RBINS 19659	F	318	18	15-15-15, U	2+228, U	D	18, D, U	7(3-4)/7(3-4)	7(4)/7(4)	0/0	1/1	0/0	2/2	1/1
<i>Polemon fulvicollis laurenti</i>														
RBINS 19664	M	407	26	15-15-15, U	3+265, U	D	23, D, U	7(3-4)/7(3-4)	7(4)/7(4)	0/0	1/1	0/0	2/1	1/1
Colubridae														
<i>Dasypeltis fasciata</i>														
R 107	F	NA	NA	29-24-21, K	263, U	S	75, D, U	NA	NA	NA	NA	NA	NA	NA
RBINS 19726	F	735	138	28-25-21, K	1+250, U	S	79, D, U	7(3-4)/7(3-4)	8(3)/8(3)	0/0	1/1	0/0	2/2	2/2
<i>Dipsadoboa viridis gracilis</i>														
R 38	F	680	188	17-17-13, U	222, U	S	102, S, U	8(4-5)/8(4-5)	11(5)/11(5)	1/1	1/1	0/0	2/2	1/1
RBINS 19811	M	643	216	17-17-13, U	2+220, U	S	106, S, U	8(4-5)/8(4-5)	10(6)/11(6)	1/1	1/1	0/0	3/2	1/1
<i>Dipsadoboa weileri</i>														
R 293	F	NA	NA	17-17-13, U	187, U	S	59, S, U	9(5-6)/9(5-6)	NA	1/1	1/1	0/0	2/2	1/1
R 294	Juv.	NA	NA	17-17-13, U	187, U	S	59, S, U	8(4-5)/8(4-5)	10(5)/10(5)	1/1	1/1	0/0	2/2	1/1
R 297	F	NA	NA	19-17-13, U	186, U	S	63, S, U	8(4-5)/8(4-5)	11(5)/11(5)	1/1	1/1	0/0	2/2	1/1
R 397	F	635	140	19-17-13, U	189, U	S	59, S, U	8(4-5)/8(4-5)	10(5)/10(5)	1/1	1/1	0/0	2/2	1/1
RBINS 19700	M	577	130	17-17-13, U	2+191, U	S	64, S, U	8(4-5)/8(4-5)	9(5)/10(6)	1/1	2/2	0/0	2/2	1/1
RBINS 19748	M	542	116	17-17-13, U	2+183, U	S	59, S, U	8(3-5)/8(4-5)	10(6)/10(6)	1/1	1/1	0/0	2/2	1/1
RBINS 19810	M	498	106	17-17-13, U	2+185, U	S	1D + 59S, U	8(4-5)/8(4-5)	10(6)/10(6)	1/1	1/1	0/0	2/2	1/1
<i>Grayia ornata</i>														
R 102	M	644	270	NA-17-15, U	149, U	D	75, D, U	NA	11(4)/11(4)	1/1	NA	NA	NA	2/2
R 201	F	NA	NA	NA-17-15, U	NA	D	73, D, U	NA	10(4)/10(4)	1/1	NA	NA	NA	2/2
R 217	F	NA	NA	NA-17-15, U	149, U	D	69, D, U	NA	11(4)/11(4)	1/1	NA	NA	NA	2/2
RBINS 19648	F	187	62	17-17-17, U	1+150, U	D	70, D, U	8(4)/8(4)	11(5)/11(5)	1/1	1/1	0/0	2/2	2/2
RBINS 19649	F	208	69	17-17-17, U	1+148, U	D	70, D, U	8(4)/8(4)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
RBINS 19683	M	558	236	17-17-15, U	1+147, U	D	81, D, U	8(4)/8(4)	11(5)/9(4)	1/1	1/1	0/0	2/2	2/2
RBINS 19801	M	624	232	17-17-16, U	1+143, U	D	74, D, U	8(4)/8(4)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
RMCA 1987.42.R.4	M	622	>189	17-17-17, U	2+146, U	D	>54, D, U	8(4)/8(4)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
RMCA 1987.42.R.5	M	641	>243	17-17-15, U	1+146, U	D	>74, D, U	8(4)/8(4)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
<i>Hapsidophrys lineatus</i>														
R 69	F	NA	NA	15-15-11, K	164, K	S	104, D, K	9(4-5)/9(4-5)	11(5)/11(5)	1/1	2/2	0/0	2/2	2/2
RBINS 19678	Juv.	252	101	15-15-11, K	0+169, K	S	106, D, K	8(4-5)/8(4-5)	8(5)/9(5)	1/1	1/1	0/0	2/2	2/2
RBINS 19688	F	781	340	15-15-11, K	0+162, K	S	106, D, K	8(4-5)/8(4-5)	8(5)/8(5)	1/1	1/1	0/0	2/2	1/2
RBINS 19779	F	745	>261	15-15-11, K	0+167, K	S	>84, D, K	8(4-5)/8(4-5)	9(5)/9(5)	1/1	1/1	0/0	2/2	2/2
RBINS 19780	F	645	>148	15-15-11, K	0+167, K	S	>49, D, K	8(4-5)/NA	8(5)/8(5)	1/NA	1/1	0/0	NA	NA/2
RBINS 19781	F	704	305	15-15-11, K	2+165, K	S	110, D, K	8(4-5)/8(4-5)	9(5)/9(5)	1/1	2/2	0/0	2/2	2/2
<i>Hapsidophrys smaragdinus</i>														
R 9	F	NA	NA	15-15-11, K	162, K	D	>113, D, K	9(5-6)/9(5-6)	NA	1/1	1/1	0/0	2/2	1/1
R 405	F	NA	NA	15-15-11, K	155, K	D	145, D, K	9(5-6)/9(5-6)	NA	1/1	1/1	0/0	2/2	1/1
R 406	M	NA	NA	15-15-11, K	153, K	D	149, D, K	9(5-6)/9(5-6)	NA	1/1	1/1	0/0	2/2	1/1
RBINS 19677	Juv.	257	162	15-15-11, K	1+158, K	D	154, D, K	9(5-6)/8(5-6)	9(5)/9(6)	1/1	1/1	0/0	2/3	1/1
RBINS 19698	F	608	>357	15-15-11, K	2+155, K	D	>127, D, K	9(5-6)/9(5-6)	9(5)/9(5)	1/1	1/1	0/0	2/2	1/1
RBINS 19747	M	480	316	15-15-11, K	1+156, K	D	149, D, K	9(5-6)/9(5-6)	9(5)/9(5)	1/1	1/1	0/0	2/2	1/1
RBINS 19782	F	642	>349	16-15-11, K	2+156, K	D	>116, D, K	9(5-6)/9(5-6)	10(5)/9(5)	0/0	1/1	0/0	2/2	1/0
<i>Philothamnus carinatus</i>														
R 53	F	513	>151	13-13-11, U	150, K	S	>64, D, U	9(4-6)/9(4-6)	9(5)/9(5)	1/1	1/1	0/0	2/2	2/2
R 104	M	NA	NA	13-13-11, U	148, K	S	85, D, U	9(4-6)/9(4-6)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
R 105	F	NA	NA	13-13-11, U	156, K	S	81, D, U	9(4-6)/9(4-6)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
R 191	M	497	175	13-13-11, U	147, K	S	80, D, U	9(4-6)/9(4-6)	9(5)/9(5)	1/1	1/1	0/0	2/2	2/2
RBINS 19646	F	441	150	13-13-11, U	1+157, K	S	78, D, U	8(3-5)/9(4-6)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
RBINS 19749	M	402	148	13-13-11, U	1+150, K	S	84, D, U	9(4-6)/9(4-6)	10(5)/10(5)	1/1	1/1	0/0	2/2	2/2
RBINS 19767	M	349	142	13-13-11, U	2+151, K	S	88, D, U	10(4-7)/10(4-6)	10(5)/10(5)	1/1	1/1	0/0	3/4	2/2
<i>Rhamnophis aethiopissa ituriensis</i>														
R 195	M	NA	NA	15-15-11, U	165, K	D	149, D, K	8(4-5)/8(4-5)	9(5)/9(5)	1/1	1/1	0/0	2/2	1/1
R 256	Juv.	NA	NA	15-15-15, K	162, K	D	>97, D, K	8(4-5)/8(4-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 407	F	NA	NA	15-15-11, K	166, K	D	145, D, K	7(4-5)/7(4-5)	10(5)/9(4)	1/1	1/1	0/0	2/2	1/1

Appendix 1 (cont'd)

Species / Specimen	Sex	SVL	TaL	DSR	PV+VEN	A	SC	SL	IL	Lor	PreO	SubO	PoO	AT
R 542	F	NA	NA	15-13-13, K	166, K	D	138, D, K	NA	9(4)/9(4)	1/1	1/1	0/0	2/2	1/1
RBINS 19701	F	812	431	15-15-11, U	0+166, K	D	140, D, K	9(5-6)/9(5-6)	9(5)/9(5)	1/1	1/1	0/0	2/2	1/1
RBINS 19804	M	869	485	15-15-9, U	1+164, K	D	150, D, K	8(4-5)/8(4-5)	9(5)/9(5)	1/1	1/1	0/0	2/2	1/1
<i>Thelotornis kirtlandii</i>														
RBINS 19778	FF	689	>368	21-19-13, K	0+174, U	D	>122, D, U	8(4-5)/8(4-5)	8(4)/9(5)	1/1	1/1	1/1	2/2	1/1
<i>Thrasops jacksonii</i>														
R 398	Juv.	400	>136	19-19-15	196	D	>109, D	8(4-5)/8(4-5)	11(4)/11(4)	1/1	1/1	0/0	3/3	1/1
Elapidae														
<i>Dendroaspis jamesoni</i>														
RBINS 19597	NA	>280	NA	15-NA-NA, U	1+>42, U	NA	NA	8(4)/8(4)	9(4)/8(4)	0/0	3/3	1/1	3/3	1/1
<i>Naja annulata annulata</i>														
R 56	NA	1253	340	23-21-17, U	206, U	NA	NA	8(3-4)/8(3-4)	10(4)/10(4)	0/0	1/1	0/0	3/3	1/1
<i>Naja melanoleuca</i>														
R 198	F	NA	NA	27-19-13, U	218, U	S	69, D, U	7(3-4)/7(3-4)	8(4)/8(4)	0/0	1/1	NA	NA	1/1
R 276	NA	NA	NA	NA	NA	S	NA	7(3-4)/7(3-4)	8(4)/8(4)	0/0	1/1	NA	NA	1/1
R 301	NA	NA	NA	NA	NA	S	NA	7(3-4)/7(3-4)	8(4)/8(4)	0/0	1/1	NA	NA	1/1
R 319	NA	NA	NA	NA	NA	S	NA	7(3-4)/7(3-4)	8(4)/8(4)	0/0	1/1	NA	NA	1/1
R 543	M	NA	NA	25-19-13, U	218, U	S	66, D, U	7(3-4)/7(3-4)	8(4)/8(4)	0/0	1/1	NA	NA	1/1
RBINS 19775	F	1888	347	25-19-15, U	2+227, U	S	62, D, U	6(3)/7(3-4)	8(4)/8(4)	0/0	1/1	2/1	2/2	1/1
Lamprophiidae														
<i>Boaedon olivaceus</i>														
R 37	F	NA	NA	27-27-21, U	204, U	S	42, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 55	F	NA	NA	25-27-21, U	207, U	S	>13, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	2/2	0/0	2/2	1/1
R 57	F	NA	NA	27-27-21, U	212, U	S	41, S, U	8(4-5)/8(4-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 68	F	NA	NA	25-27-21, U	212, U	S	45, S, U	NA	9(4)/9(4)	1/1	1/1	0/0	2/2	1/1
R 171	F	NA	NA	26-27-21, U	214, U	S	44, S, U	NA	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 172	M	NA	NA	25-27-21, U	189, U	S	52, S, U	NA	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 194	M	NA	NA	27-27-21, U	189, U	S	52, S, U	8(4-5)/9(4-6)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 196	M	NA	NA	27-27-21, U	198, U	S	56, S, U	NA	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 280	F	NA	NA	29-27-23, U	205, U	S	42, S, U	8(4-5)/8(3-5)	8(4)/8(4)	1/1	2/2	0/0	2/2	1/1
R 281	F	NA	NA	27-28-21, U	207, U	S	44, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 403	F	NA	NA	27-27-21, U	211, U	S	45, S, U	8(4-5)/9(4-6)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 404	F	NA	NA	27-27-21, U	211, U	S	39, S, U	NA	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 546	F	NA	NA	27-29-21, U	212, U	S	40, S, U	NA	8(3)/8(3)	1/1	1/1	0/0	2/2	1/1
R 547	F	NA	NA	27-29-21, U	212, U	S	44, S, U	NA	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 548	F	NA	NA	27-29-21, U	207, U	S	41, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 549	M	NA	NA	27-27-21, U	187, U	S	55, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
R 550	F	NA	NA	27-27-21, U	204, U	S	43, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
RBINS 19713	FF	675	100	25-29-21, U	2+211, U	S	44, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/0	1/2	0/0	2/2	1/1
RBINS 19718	M	505	109	25-27-21, U	3+190, U	S	57, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
RBINS 19719	M	562	124	25-27-21, U	3+199, U	S	58, S, U	8(3-5)/8(3-5)	8(3)/8(4)	1/1	1/1	0/0	2/2	1/1
RBINS 19724	F	418	58	26-29-21, U	3+202, U	S	1D + 39S, U	8(3-5)/9(4-6)	8(3)/8(3)	1/1	1/1	0/0	2/2	1/1
RBINS 19727	F	592	84	25-29-21, U	3+205, U	S	1D+40S, U	9(4-6)/8(4-5)	9(4)/8(3)	1/1	1/2	0/0	2/2	1/1
RBINS 19756	M	506	111	25-27-21, U	2+186, U	S	54, S, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	2/2	1/1
RBINS 19758	M	360	73	24-27-21, U	2+185, U	S	51, S, U	8(3-5)/8(3-5)	9(4)/8(4)	1/1	1/1	0/0	2/2	1/1
<i>Bothrophthalmus lineatus</i>														
R 6	M	632	188	23-23-21, K	190, U	S	78, D, U	7(4-5)/7(4-5)	7(4)/7(4)	1/1	NA	0/0	2/2	NA
R 311	M	NA	>NA	25-23-21, K	195, U	S	>51, D, U	7(4-5)/7(4-5)	8(4)/8(4)	1/1	NA	0/0	2/2	NA
R 540	F	NA	>NA	23-23-21, K	198, U	S	>49, D, U	7(4-5)/7(4-5)	7(4)/7(4)	1/1	NA	0/0	2/2	NA
RMCA 1987.42.R.2	M	658	>174	21-23-21, K	2+190, U	S	>82, D, U	8(4-5)/8(4-5)	8(4)/8(4)	1/1	2/2	0/0	2/2	1/1
RMCA 1987.42.R.3	NA	780	>153	23-23-21, K	2+189, U	S	>64, D, U	8(4-5)/8(4-5)	8(4)/7(4)	1/1	2/2	0/0	3/2	1/1
<i>Chamaelycus fasciatus</i>														
RBINS 19695	M	249	47	16-17-15, U	1+185, U	S	48, D, U	7(3-5)/7(3-5)	8(5)/8(5)	1/1	1/1	0/0	3/3	2/2
<i>Chamaelycus parkeri</i>														
RBINS 19696	FF	306	66	17-17-17, U	NA+177, U	S	54, D, U	6(3-4)/6(3-4)	7(5)/7(5)	1/1	1/1	0/0	2/2	1/1
<i>Gonionotophis brussauxi</i>														
RBINS 19676	M	296	106	21-21-21, K	2+182, U	S	86, D, U	8(4-6)/8(4-6)	8(5)/8(5)	0/0	1/1	0/0	2/2	1/1
<i>Hormonotus modestus</i>														
RBINS 19647	F	602	>143	15-15-13, U	2+228, K	S	>75, D, U	8(3-5)/8(3-5)	8(4)/8(4)	1/1	1/1	0/0	3/3	2/2
<i>Limaformosa savorgnani</i>														

Appendix 1 (cont'd)

Species / Specimen	Sex	SVL	TaL	DSR	PV+VEN	A	SC	SL	IL	Lor	PreO	SubO	PoO	AT
R 295	F	NA	NA	17-15-15, K	225, K	S	54, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	0/0	2/2	1/1
RBINS 19687	F	977	148	15-15-15, K	1+226, K	S	56, D, K	7(3-5)/7(3-5)	8(5)/8(5)	1/1	2/2	0/0	1/1	1/1
<i>Lycophidion laterale</i>														
RBINS 19651	M	426	49	17-17-17, U	1+199, U	S	36, D, U	8(4-5)/8(4-5)	8(5)/7(4)	1/1	1/1	0/0	2/2	1/1
RMCA 87-42-R-6	NA	512	56	17-17-17, U	1+200, U	S	33, D, U	8(4-5)/7(4-5)	7(5)/7(5)	1/1	1/1	0/0	2/2	1/1
<i>Mehelya poensis</i>														
RBINS 19806	F	788	210	17-15-15, K	2+249, K	S	101, D, K	7(3-4)/7(3-4)	8(5)/8(5)	1/1	1/1	0/0	3/2	2/2
Pythonidae														
<i>Python sebae</i>														
R 210	NA	686	88	65-84-45, U	288, U	S	61, D, U	14(0)/14(0)	21/21	NA	NA	NA	NA	NA
Viperidae														
<i>Atheris squamigera</i>														
R 165	M	422	103	19-18-13, K	170, U	S	72, S, U	10(0)/10(0)	11/10	NA	NA	NA	NA	NA
RBINS 19596	F	498	>42	19-20-16, K	1+163, U	S	>20, S, U	10(0)/10(0)	11(2)/11(2)	NA	NA	NA	NA	NA
<i>Bitis gabonica</i>														
R 39	NA	822	68	41-37-27, K	133, U	S	29, D, U	14(0)/14(0)	17(5)/17(5)	NA	NA	NA	NA	NA
<i>Bitis nasicornis</i>														
R 42	M	866	150	31-33-21, K	132, U	S	28, D, U	18(0)/18(0)	18(4)/18(4)	NA	NA	NA	NA	NA
R 50	M	NA	NA	32-33-23, K	131, U	S	29, D, U	NA	NA	NA	NA	NA	NA	NA
R 213	M	NA	NA	31-33-21, K	131, U	S	29, D, U	18(0)/18(0)	18(4)/18(4)	NA	NA	NA	NA	NA
R 306	F	NA	NA	35-35-22, K	139, U	S	21, D, U	18(0)/18(0)	17(4)/17(4)	NA	NA	NA	NA	NA
R 307	M	NA	NA	36-37-25, K	134, U	S	31, D, U	18(0)/18(0)	19(5)/19(5)	NA	NA	NA	NA	NA
R 309	M	NA	NA	33-37-NA, K	131, U	S	29, D, U	17(0)/17(0)	17(5)/17(5)	NA	NA	NA	NA	NA
R 402	F	NA	NA	35-39-23, K	130, U	S	21, D, U	17(0)/17(0)	18(5)/18(5)	NA	NA	NA	NA	NA
R 541	M	NA	NA	33-36-23, K	129, U	S	29, D, U	17(0)/17(0)	16(5)/16(5)	NA	NA	NA	NA	NA
RBINS 19798	F	544	46	33-37-23, K	4+134, U	S	20, D, U	18(0)/17(0)	18(5)/19(4)	NA	NA	NA	NA	NA
RBINS 19799	M	343	51	30-32-23, K	2+126, U	S	32, D, U	18(0)/17(0)	16(4)/17(5)	NA	NA	NA	NA	NA
RBINS 19800	F	344	28	31-37-28, K	3+132, U	S	19, D, U	17(0)/17(0)	19(5)/19(5)	NA	NA	NA	NA	NA
<i>Causus lichtensteini</i>														
R 40	F	NA	NA	15-15-11, K	147, U	S	14, S, U	6(0)/6(0)	9(4)/9(4)	1/1	NA	NA	2/2	2/2
R 176	M	NA	NA	15-15-11, K	136, U	S	19, S, U	6(0)/6(0)	9(4)/9(4)	1/1	NA	NA	2/2	2/2
R 178	F	NA	NA	15-15-11, K	144, U	S	18, S, U	6(0)/6(0)	9(4)/9(4)	1/1	NA	NA	2/2	2/2
R 216	F	NA	NA	15-15-11, K	145, U	S	16, S, U	6(0)/6(0)	9(4)/9(4)	1/1	NA	NA	2/2	2/2
R 285	F	NA	NA	15-15-11, K	142, U	S	16, S, U	6(0)/6(0)	8(4)/8(4)	1/1	NA	NA	2/2	2/2
R 364	F	NA	NA	15-15-11, K	146, U	S	18, S, U	6(0)/6(0)	7(4)/7(4)	1/1	NA	NA	2/2	2/2
R 545	M	NA	NA	15-15-11, K	137, U	S	22, S, U	6(0)/6(0)	9(4)/9(4)	1/1	NA	NA	2/2	2/2
RBINS 19666	F	389	30	15-15-11, K	1+146, U	S	14, S, U	6(0)/6(0)	8(4)/9(4)	1/1	2/3	1/1	2/2	2/2
RBINS 19703	F	394	33	14-15-10, K	1+149, U	S	16, S, U	6(0)/6(0)	9(4)/9(4)	1/1	3/3	1/2	2/2	2/2
RBINS 19721	M	319	32	15-15-11, K	1+139, U	S	19, S, U	6(0)/6(0)	8(4)/8(4)	1/1	2/3	3/2	2/2	2/2
RBINS 19722	M	408	47	15-15-11, K	1+133, U	S	20, S, U	6(0)/6(0)	9(4)/8(4)	1/1	3/3	1/1	2/2	2/2
RBINS 19723	F	371	30	15-15-10, K	1+147, U	S	17, S, U	6(0)/6(0)	8(4)/8(4)	1/1	2/2	1/1	2/2	2/2
RBINS 19733	M	483	54	15-15-11, K	1+136, U	S	20, S, U	6(0)/6(0)	8(4)/8(4)	1/1	2/2	NA	2/2	2/2
RBINS 19755	M	278	26	15-15-10, K	1+140, U	S	19, S, U	6(0)/6(0)	8(4)/8(4)	1/1	2/2	2/2	2/2	2/2
RBINS 19760	M	343	35	15-15-11, K	1+139, U	S	20, S, U	6(0)/6(0)	8(4)/8(4)	1/1	3/3	1/2	2/2	2/2
RBINS 19761	F	367	34	13-15-10, K	1+142, U	S	17, S, U	6(0)/6(0)	8(4)/9(4)	1/1	2/2	2/2	2/2	2/2
<i>Causus maculatus</i>														
R 36	F	NA	NA	19-18-12, K	141, U	S	18, D, U	7(0)/7(0)	10(4)/10(4)	NA	NA	NA	NA	2/2
R 51	M	NA	NA	17-17-12, K	132, U	S	20, NA	6(0)/6(0)	10(4)/10(4)	NA	NA	NA	NA	2/2
R 317	F	NA	NA	18-17-11, K	137, U	S	18, D, U	6(0)/6(0)	10(4)/10(4)	NA	NA	NA	NA	2/2
R 401	M	NA	NA	18-18-12, K	NA	S	20, NA	6(0)/6(0)	9(4)/9(4)	NA	NA	NA	NA	2/2
R 453	F	NA	NA	19-18-12, K	140, U	S	19, NA	6(0)/6(0)	11(4)/10(3)	NA	NA	NA	NA	2/2
R 454	M	NA	NA	18-17-11, K	136, U	S	21, NA	6(0)/6(0)	10(4)/10(4)	NA	NA	NA	NA	2/2
R 455	M	NA	NA	18-17-11, K	137, U	S	21, NA	6(0)/6(0)	10(4)/9(3)	NA	NA	NA	NA	2/2
R 544	F	NA	NA	18-17-11, K	143, U	S	17, D, U	6(0)/6(0)	8(3)/8(3)	NA	NA	NA	2/2	2/2
RBINS 19598	M	497	49	18-17-12, K	2+133, U	S	1S+19D+2S, U	6(0)/6(0)	9(4)/9(4)	2/2	3/2	0/1	2/3	2/2
RBINS 19599	F	439	40	19-19-11, K	1+138, U	S	1S+16D+2S, U	6(0)/6(0)	9(4)/9(4)	2/2	2/2	2/2	1/1	2/2
RBINS 19699	F	373	>31	18-17-12, K	1+139, U	S	>16, D, U	6(0)/6(0)	8(4)/9(4)	1/1	2/2	0/0	2/2	2/2
RBINS 19716	M	471	50	17-17-12, K	1+136, U	S	1S+20D+3S, U	6(0)/6(0)	10(4)/10(4)	2/2	2/2	0/1	2/2	2/2
Incertae sedis														
<i>Buroma depressiceps</i>														
RBINS 19658	NA	155	25	19-19-17, K	2+>150, U	S	34, D, U	7(3-4)/7(3-4)	8(4)/8(4)	1/1	2/2	0/0	2/2	1/1

Herpetology 2023

In this column the editorial staff presents short abstracts of herpetological articles we have found of interest. This is not an attempt to summarize all of the research papers being published; it is an attempt to increase the reader's awareness of what herpetologists have been doing and publishing. The editor assumes full responsibility for any errors or misleading statements.

ANOLES AT BARRO COLORADO ISLAND

R. Andrews and A. S. Rand [2021, *Herpetologica* 77(3):145-153]. The first author presents the results of 50 yrs (1971–2020) of annual censuses of *Anolis apletophallus* on Barro Colorado Island, Panama. The main objectives were to assess why abundance in end-of-the-year censuses varied substantially from year to year and why it declined over time. Abundance was negatively correlated with annual rainfall, 90% of which occurs in the wet season when eggs are laid. Lizard abundance is indirectly linked to rainfall through the interaction between *Anolis* eggs and their major predator, *Solenopsis* ants. More eggs are killed by ants when rainfall is relatively high because ants are more active and encounter more eggs than when rainfall is relatively low. While rainfall accounts for variability in abundance, it has not changed over time and thus may not account for the overall decline in abundance. Abundance was positively correlated with the Southern Oscillation Index (SOI) lagged by 1 yr. High SOI (and high abundance) is associated with cool and wet La Niña conditions and low values with dry and warm El Niño conditions. That low abundance is associated with dry and warm El Niño conditions (low SOI) conflicts with the negative correlation between abundance and rainfall where low abundance is associated with high rainfall. Moreover, abundance was negatively correlated with $T_{\min}$ (minimum annual temperature). The mechanism by which increasing $T_{\min}$ during the census period is linked to declining abundance is unknown. Three climatic factors are correlated with lizard abundance, but none of them explain why abundance has declined. A third objective was to examine the relationship between species richness and species dominance of *Anolis* communities with respect to rainfall patterns. Tropical forests typically have a maximal richness of 7–8 species. The authors' study sites in Panama have high species richness, but *Anolis apletophallus* individuals made up $\geq 96\%$ of all records, an unexpected level of species dominance. Comparisons among sites suggest that the number of *Anolis* species in a community is related to annual rainfall, and dominance is related to seasonality of rainfall. Dry forests have few *Anolis* species and wet forests have as many as 7–8 species. Forests with short wet seasons (months with >100 mm rainfall) have a high likelihood that individuals of one species will dominate the community.

PLANT INGESTION BY WEST AFRICAN FROGS

M. Schäfer et al. [2022, *Herpetological Monographs* 36:49-79] note that although frogs are predominately opportunistic carnivores, numerous studies report large amounts of plant material in anuran stomachs, citing accidental ingestion as the likely cause. They present evidence suggesting deliberate plant uptake in the sabre-toothed frog (*Odontobatrachus ziamia*) and propose that this trait is specific to the entire family Odontobatrachidae. They performed stomach-flushing on 814 frogs, resulting in 665 dietary samples comprising all five *Odontobatrachus* species and two similar-sized, syntopic frogs, *Astylosternus occidentalis* and *Conraua alleni*. Dietary samples were collected across the entire range of *Odontobatrachus*, in both wet and dry season. Additionally, the authors collected stomach contents of an *O. ziamia* population during a 12-d capture–mark–recapture study in three different river habitats and compared the consumed and available plant material. They found that all *Odontobatrachus* species ingested the pinnate leaf of the riparian tree *Parkia bicolor*. These leaves were the most abundant food items in the stomachs of three out of the five *Odontobatrachus* species. Although mean proportional uptake of the leaflets did not differ seasonally, the maximum amount of leaflets was greater during the dry season, coinciding with peak leaflet availability. Up to 100 single leaflets were found in stomachs of *Odontobatrachus arndti*, but syntopic *Astylosternus* and *Conraua* had ingested considerably smaller quantities of *Parkia* leaflets. Lastly, the study found a greater prevalence of *Parkia* leaflets in females, with significant variation in leaflet uptake between stream microhabitats that could not be explained by the availability of the plant material. Consequently, the authors analyzed the dietary items for co-occurrences of plant material and preyed-upon animals that would support the hypothesis of an accidental uptake. However, we could not find biologically meaningful co-occurrences. Based on the combined results of stomach-flushing, availability of food items, absence of meaningful co-occurrences of plant with animal matter and feeding experiment, they concluded that leaflets were likely swallowed deliberately, but not eaten for energy demands. The reason for the deliberate ingestion of plant material across the genus *Odontobatrachus* so far remains unresolved.

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UPCOMING MEETINGS

Monthly meetings of the Chicago Herpetological Society begin at 2:00 P.M. on the third Sunday of each month. **The next meeting will take place on March 19.** The program has not yet been confirmed. Please try to join us online or *in person* at the Notebaert Nature Museum, 2430 N. Cannon Drive, Chicago.

At the April 16 meeting, **Maria and Doug Eifler** will speak to us via Zoom from the country of Tunisia. The program will cover several species of lizards and other herps found at the edge of the Sahara Desert. The Eiflers are the founders and leaders of the Erell Institute, a not-for-profit NGO based in Lawrence, Kansas. The Institute runs annual “Lizard Camps,” which provide a hands-on research training experience for emerging women in science.

Please check the CHS website or Facebook page each month for information on the program. Information about attending a Zoom webinar can be found here:

<<https://support.zoom.us/hc/en-us/articles/115004954946-Joining-and-participating-in-a-webinar-attendee->>

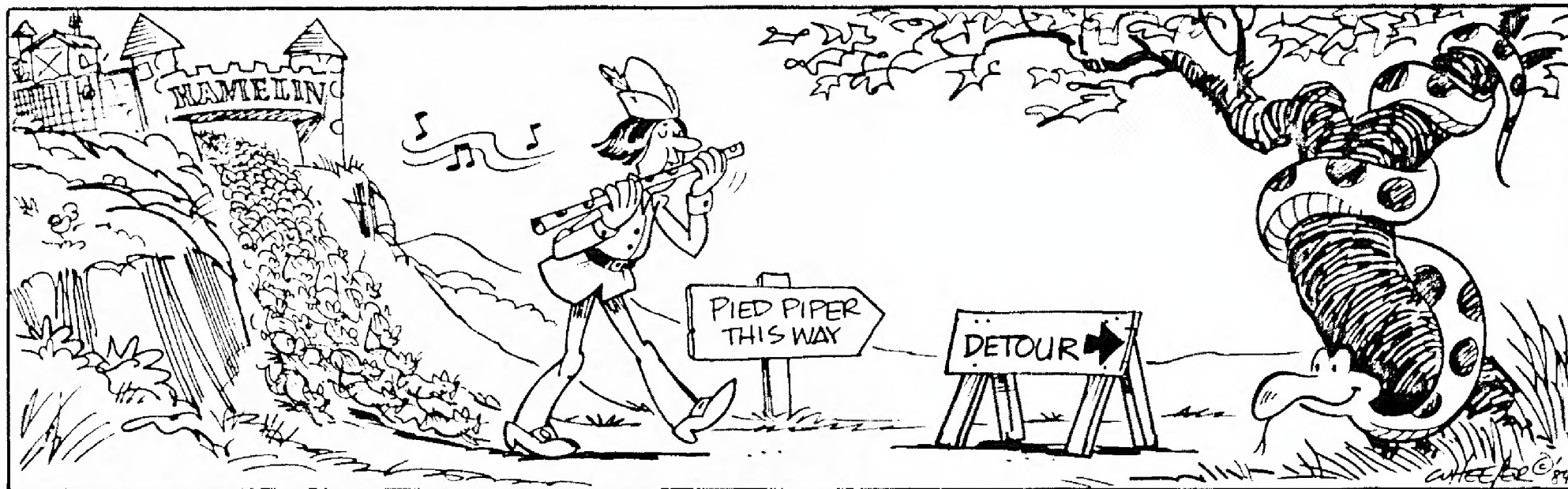
Board of Directors Meeting

Are you interested in how the decisions are made that determine how the Chicago Herpetological Society runs? And would you like to have input into those decisions? The next board meeting will be held online. If you wish to take part, please email: jarcher@chicagoherp.org.

NEW CHS MEMBERS THIS MONTH

Elizabeth Schofeld

THE ADVENTURES OF SPOT



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